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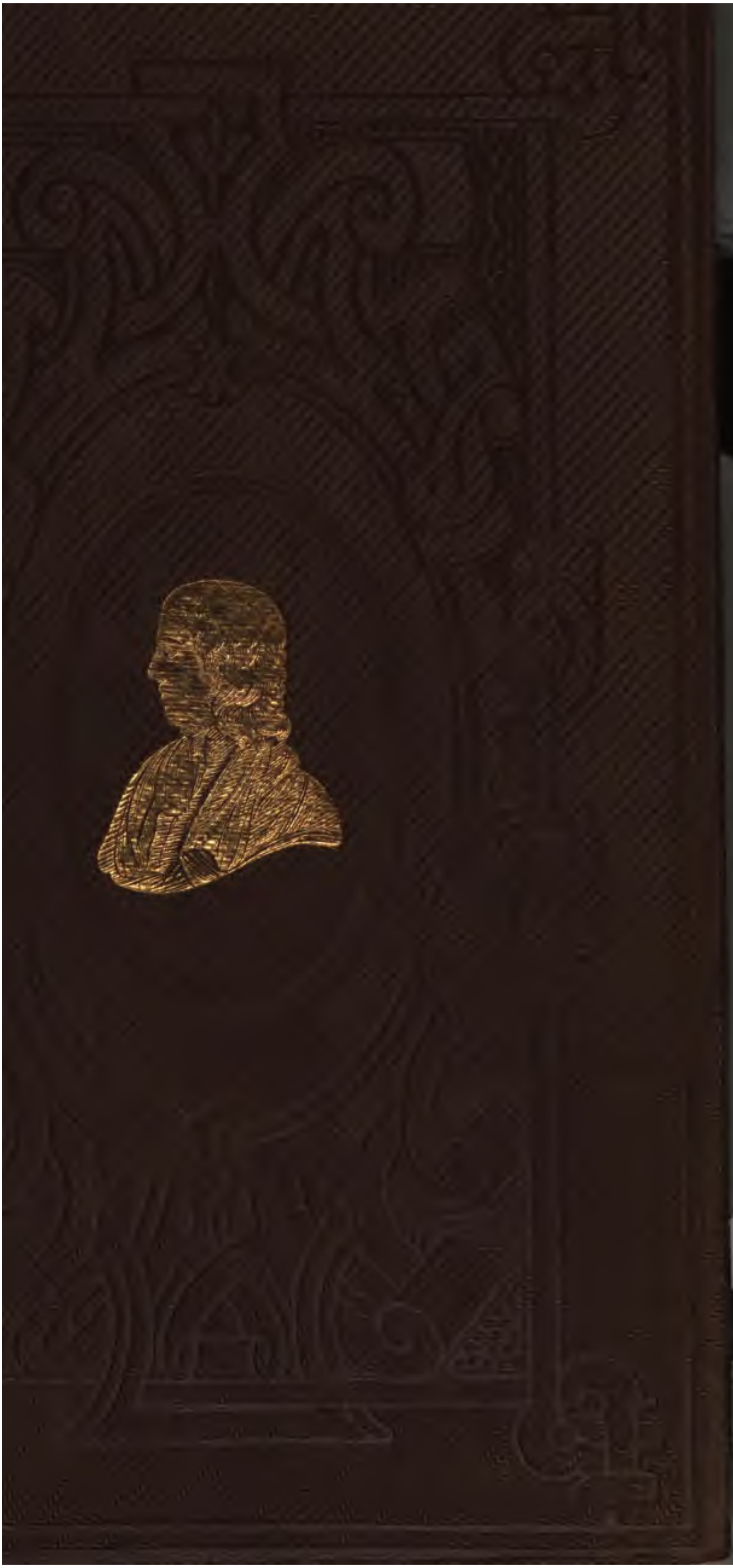

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THE NEW SYDENHAM SOCIETY.

INSTITUTED MDCCCLVIII.

VOLUME LXIII.

ON

DISEASES OF THE SKIN,

INCLUDING THE

EXANTHEMATA.

BY

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VOL. IV.

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ERRATA.

Page 194, it should be Chapter LVII.
„ 233, sub-heading should read—c. Carcinoma, &c.
„ 236, it should be Chapter LVIII.

ON

DISEASES OF THE SKIN.

CHAPTER LIII.

(CLASS VIII.—DIV. III.—CELLULAR NEW GROWTHS.)

RHINOSCLEROMA.

10

HEBRA has designated by the term Rhinoscleroma a new growth, which was described by him and myself, conjointly, in the year 1870,* as a skin disease which had not previously been recognised.

Up to that time, Hebra had seen seven cases,† three of which had also fallen under my notice. Since then we have seen eight cases,‡ so that the number now amounts to fifteen. In a discussion on this disease, started by Prof. Weinlechner (at a meeting of the k. k. Ges. der Ærzte in Wien, Feb. 11, 1870),

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* Hebra, on a peculiar new growth on the nose, with microscopic examination by (Moriz Kohn) Kaposi. 'Rhinosclerom, Wiener med. Wochenschrift,' 1870, No. 1.

† In the publication quoted, nine cases are spoken of. I must, however, coinciding with Hebra's opinion, omit two of them, which were characterised most remarkably by tumours of bony hardness situated on the nose and adjacent parts of the cheeks, and on the glabella. One of the cases remained under observation till death ensued. A hard bony tumour had developed subsequently over the left parietal bone. At the autopsy the parietal tumour was found to have perforated the bone, and to be prolonged to the dura-mater and its inner surface. The new growth was of a carcinomatous character.

The seven other cases, as well as the eight more recent ones, fifteen in all, have, however, evinced the characters of rhinoscleroma in a purely typical form.

‡ Two men and two women in the Clinique for Skin Diseases, one man in the out-patient department, one woman (out-patient), one woman in the surgical department of "Primarius," Dr. Salzer, and one woman, a nurse.

Prof. Weinlechner, Prof. Pitha, and Dr. Hofmokl stated that they had also seen similar cases.

In the fifteen cases of the disease above mentioned, the symptoms have been quite similar in all. We are in a position, therefore, starting from this basis, to describe the general characters of the disease in question in the following way.

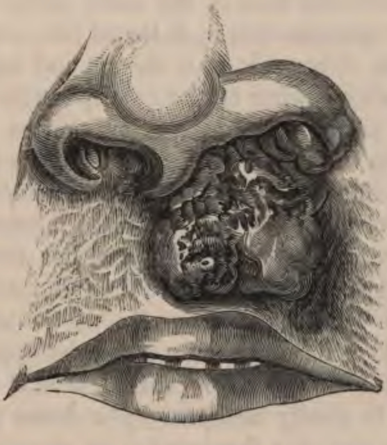
Symptoms.

Rhinoscleroma appears in the form of flat, or rather elevated, sharply defined, isolated, or conglomerate tubercles, rounded prominences, or plate-shaped structures of extraordinary density, which attack the skin or the mucous membrane of the alae or septum nasi, and the adjacent portions of the lip, that is, the circumference of the anterior nares. The tubercles and rounded prominences are either of the colour of the normal skin, and smooth and supple on the surface, or they are of a uniformly bright or dark-brownish red colour, crossed by some dilated vessels, have a glossy, shining appearance, and are bald (without hairs or follicles). The epidermis covering them is then dry and cracked. Here and there, are deeper rhagades corresponding to the furrows radiating from the attachments of the alæ nasi. A small quantity of viscid, sticky fluid is secreted from them, or they are covered with yellowish, dry, adherent scabs where the rhagades are situated. The skin is not movable over the tubercles, it can only be pinched up together with them. The tubercles appear infiltrated into the substance of the skin itself. They feel exceedingly hard to the touch. They may be as hard as cartilage, or—hyperbolically—as hard as ivory (Hebra). On compressing them, a certain amount of elasticity is perceptible. At the same time, the patients experience somewhat considerable pain, which does not occur spontaneously. The skin immediately adjoining the hard, infiltrated parts is quite normal. It is neither swollen nor œdematous, nor does it show any signs of inflammation. The localisation of the growth before mentioned is, moreover, characteristic. It invariably affects portions or the whole of the skin or mucous membrane immediately surrounding or in the neighbourhood of the anterior nares. The tubercles and rounded eminences are developed on one or both alæ nasi, or on the septum cutaneum, spreading from thence inwards over the mucous membrane of the septum, or of the alæ nasi; and on the upper lip, in an isolated form, or joined with those on the septum or on the alæ nasi.* In other respects, as regards their form, number, whether they are movable or not, their consequences, &c., &c., they differ according to the locality from which they arise, and the stage of development and course in which the disease comes under observation.

Development.—Course.

The disease has an exceedingly chronic course. It commences without pain and without being accompanied by any manifest symptoms, as a thickening and induration of the skin, in any of the situations previously mentioned. Generally, either the skin of the septum or the edge of one of the alæ nasi is attacked. As the disease progresses, the swelling extends in

FIG. 1.



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[*] In one case the growth commenced in the velum and hard palate in the form of a hard infiltration causing shrinking, and in another case it began in the mucous membrane of the nose in the form of a hard tumour which projected like a polypus; the skin covering the anterior nares only becoming affected later. In all the other cases which we saw, the scleroma of the mucous membrane noted was associated from the first with an external scleroma.

the direction of the cavity of the nose as well as outwards, and the shape of the anterior nares, which, at first, is only slightly affected, becomes characteristically deformed (fig. 1).

When the disease has existed and steadily progressed for some years, the ala nasi becomes pushed outwards to an extreme degree, and, if both alæ are affected, the anterior nares, which have naturally a pyriform contour, become widened from side to side, but flattened from the tip of the nose towards the upper lip, and the tip of the nose, therefore, appears broad and depressed. Inwards, towards the cavity of the nose, the alteration seems no less remarkable. The dense, cartilage-like mass from the septum, on the one side, and that from the ala nasi on the other, grow inwards towards the cavity of the nose, and thus cause a steadily increasing narrowing of the latter, which is also contributed to by the hard mass springing from the upper lip, which involves the floor of the nasal cavity as it develops, and, projecting upwards into it, is thrust like a wedge between those growing on either side from the ala and septum nasi. In this way, such a narrowing of the nasal passage is caused from the front and sides, for a longer or shorter distance, that occasionally even the finest probe can hardly be passed through the part of the canal, about half or three-quarters of an inch in length, which is bounded by the indurated masses; and, finally, complete closure of the canal results, either for a part or the whole of its length corresponding to the induration. The nose, deformed in the way described, is also, at the same time, perfectly rigid. The alæ nasi can neither be approximated nor expanded laterally. The whole nostril is as if made of ivory. The upper lip is mostly occupied by a dense plate, which is rounded, of the size of a threepenny- or sixpenny-piece, or of a half-crown, is very prominent, and has steep borders; or is quite flat, and scarcely perceptible on the surface. It can, however, easily be recognised by the finger, and is felt to be distinctly limited. The mucous membrane on the under surface of the upper lip feels and looks normal. It is also movable over the under surface of the hard disc infiltrated in the skin. At a later stage, the mucous membrane of the lip is also involved in the new growth and becomes fixed. Ultimately, the periosteum of the alveolus, and even the bone (superior maxilla) itself, become affected (Salzer's case). The cartilage of the ala nasi becomes involved in the same way, and is lost in the new growth.

The tubercles do not undergo any sort of metamorphosis, even after they have existed for many years. They do not become softer in the centre, nor do they ulcerate on the surface. Superficial excoriations are the utmost changes manifested.

If a piece be excised, or a portion be destroyed by the cautery, the wounded surface, on the remaining portion of the new growth, becomes covered by a thin, brown crust, formed by serum which is exuded; it does not ulcerate, but becomes skinned over within a few days. In the course of a few weeks or months the tubercles attain their former size by renewed growth.

The malady, therefore, shows a tendency to indefinite growth. Spontaneous involution has not been observed to occur in any case.

Subjective Symptoms.

In addition to the visible deformity which is caused by the peculiar and constant localisation of the growth, it is also troublesome on account of its painfulness, which is sometimes severe on pressure, chiefly, however, by the impediment which it causes to breathing through the nostrils. This is evident even in an early stage of rigidity of the alæ nasi, but in course of time, as the tumour develops, the entrance of air is wholly prevented, as the nostril is completely occluded by the indurated mass for a depth of half or three-quarters of an inch. The patients can only breath with their mouths open. No influence appears to be exercised by the growth on the patient's constitution.

Complications.

We originally called attention to certain symptoms which, in some cases, are observed to be associated with rhinoscleroma, though we could not then say whether they had any intimate connexion with one another, or were merely accidental complications. Thus, in one case, a perforation of the hard palate, the edges of which had skinned over, was observed. In a second case, we saw a superficial ulcer on the anterior surface of the uvula, which healed spontaneously, without treatment, in the course of several weeks. In a third case of rhinoscleroma, in a woman who remained under observation for more than a year, aphonia and laryngeal spasm came on, and caused occasional attacks of dyspnœa. On laryngoscopic examination, I found the true vocal cords thickened to twice their normal size, and much congested, and on the anterior part of the upper surface of the right true vocal cord, were two linear spots, about half a line in breadth and two lines in length, which glistened like tendon. In a fourth patient, a nurse, about 30 years old, we found a peculiar alteration in the mucous membrane of the palate and pharynx, in addition to two hard, pale-red, very firm tumours, which projected like polypi from the inner surfaces of the alæ nasi on both sides into the cavity of the nose, and completely blocked up both nostrils. The free margin of the soft palate, from the commencement of the palato-glossal arch, on the one side, to its termination on the other, was bordered continuously by a glistening, white, rigid band, almost half a line in breadth, and hard to the touch; the velum, together with the uvula, seemed shrunk, as if drawn upwards and thinned. The posterior wall of the pharynx bulged forwards slightly, over an extent as large as a half-crown, the surface of the projection being slightly tuberculated, and having a shining, cicatricial appearance, the whole being exceedingly hard to the touch. The patient showed no signs of syphilis whatever, and had suffered from the malady for three years. In a fifth case, that of a young man who was under observation for a long time, and died of pneumonia post variolam, in the small-pox department of the Hospital here, there were similar changes in the mucous membrane of the palate and pharynx, in association with rhinoscleroma of the nose.*

Though these complications are so isolated and unconnected, they deserve attention, owing to the small number of the cases of rhinoscleroma which have been observed hitherto, and the more so because some physicians, without any foundation for doing so, have considered that the complications described prove the syphilitic character of the malady.† We, on the contrary, are convinced that the changes in the tracts of mucous membrane mentioned are of the same character as those on the skin, and we feel still more justified in taking this view, because the microscopic examination of the scleroma of the palate in the patient who died of small-pox revealed the same changes* as in the external scleroma.

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* We have since seen a precisely similar case of sclerosis and shrinking of the palate in a female patient.

† See the report of the meeting of the k. k. Ges. der Ærzte, 11th Feb-

Circumstances under which it occurs.—Cause.

At present we have met with rhinoscleroma in seven men and eight women. The patients were all in the middle period of life, between 25 and 40, and belonged to various nations, and followed very different occupations. No cause can be assigned for the production of the disease. One patient became pregnant during the existence of the rhinoscleroma, and gave birth to a healthy boy.

Anatomy.

On cutting into one of the tubercles of rhinoscleroma, one is surprised at the ease with which the knife makes its way in comparison with the hardness which is apparent to the touch. The cut surface is of a pale red colour, uniformly and finely granular, and bleeds moderately.

A microscopic examination of thin vertical sections (fig. 2) of nodules covered with uninjured skin, gave the following results:

The epidermis and the layers of the rete Malpighii had a normal appearance, especially was there no sort of infiltration between the elements of the latter. The papillæ were somewhat longer than usual, and conical or club-shaped; their connective-tissue framework only existed in the form of a delicately fibrillated, small-meshed network; their vessels were scanty and small. The connective tissue of the vascular layer also only consisted of a narrow network of delicate, thin, pale fibres. This network of the vascular layer of the papillæ was filled with small cells closely packed together, and the cellular infiltration, here and there, extended deeply even into the corium (fig. 2), but was

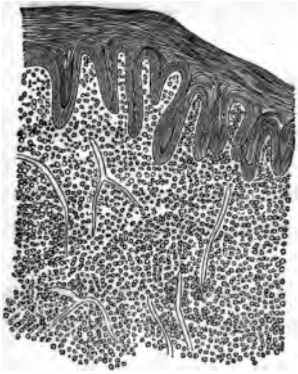
---

ruary 1870, and also 26th April 1872, at which Dr. Geber demonstrated two of the above cases, and advocated the same opinions as our own.

* Geber, 'über das Wesen des Rhinosclerom,' Arch. f. D. u. S. 1872, 4 H.

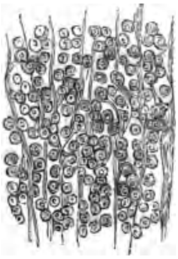
uniformly dense, throughout, only in the vascular stratum and in the papillæ, which, especially, were crammed full of cells. The cells were smaller (fig. 3), especially in the protoplasm, than the so-called granulation-cells are, as a rule, as met with in acute or chronic inflammation of the skin, and also in places where a new growth of connective tissue is taking place. The nuclei of the round-cells were small and refracted light feebly, and were finely granular. The cells appeared to be simply lodged in the delicate connective-tissue stroma of the papillæ and the upper layers of the corium, and could easily be removed by manipulation. The deeper layers of the corium showed a dense connective-tissue felt, which, in preparations from a tubercle of the left ala nasi, was only here and there infiltrated by the formed elements above described. In another case (from the department of Primarius Salzer) I found the cartilage, also, here and there densely and uniformly infiltrated with these cells. No sweat- or sebaceous-glands were visible in the sections examined. The hair follicles, and the outer and inner root-sheaths of the hairs, were free from any abnormal formed elements, whilst the papillæ adjacent to the hair follicles appeared to be crammed full of the cells described. In one case I found the structure of the cartilage of the ala nasi, especially the cartilage-cells situated beneath the corium, thus infiltrated, quite unaffected.

FIG. 2.



Hartnack, ocular 3, obj. 4.

FIG. 3.



Cells of the infiltration.
Hartnack, ocular 3, obj. 7.

The induration of the skin above described is caused by the cellular infiltration of the upper layers of the corium and of the papillæ, which we have just considered in detail. The infiltration of cells appears to commence in these layers, and only later to spread to the deeper layers of the corium, thus making the tumour more perceptible to the touch. The normal structure of the affected parts is altered, therefore, by the bulky infiltration of the newly-formed cells, in so far as the elements of the connective-tissue framework of the papillæ, and of the upper part of the corium in the first place, and, subsequently, of the corium itself, are thrust asunder and become wasted.

The cells of the new formation did not anywhere present the dim, finely granular (as if covered with dust), indistinctly nucleated, and ill-defined appearance (so-called degeneration) met with in lupus and syphilis, but they appeared in good preservation, had a sharp outline and distinct nuclei, which were well stained by carmine. Histologically, the growth was most closely allied to the forms of small-celled or granulation sarcomata (Virchow, Billroth).

Diagnosis.

Though rhinoscleroma would appear to be sufficiently characterised by its always being located at the margin of the nostril, by the extreme hardness of the nodules, their distinct limitation, the peculiar secondary change which occurs in the shape of the nose, by the extremely chronic course of the new growth, and by the absence of any indication of a retrograde metamorphosis, even after it has lasted for years; yet the diagnosis is, nevertheless, rendered somewhat difficult by the great similarity which exists between the new growth and (1) Syphilitic nodules, (2) Keloid, and (3) Epithelioma.

(1) *Syphilis.*—If the induration, at first, only affects one ala nasi, or only the septum, it presents a deceptive similarity to a commencing gummatous nodule. The suspicion as to syphilis will be strengthened if, at the same time, perforation of the hard palate, or a scar of the velum palati or of the pharynx, or a laryngeal affection exists, complications which have been met with. In fact, at the meeting above mentioned (of the k. k. Gesellschaft der Ærzte), opinions were expressed

to the effect that, possibly, rhinoscleroma was merely a syphilitic affection, or due, at all events, to some syphilitic taint. Apart from the fact that we have met with the affection in persons in whom no symptoms whatever of syphilis were present, the continued observation of the progress of the disease will save us from any such interpretation, and from confusing rhinoscleroma with syphilis. Every syphilitic infiltration of the skin, whether consisting of small or of large nodules, undergoes a retrograde metamorphosis* at least in its oldest, and, therefore, central parts, in the course of a few weeks or months. It either suppurates, forming an ulcer, and leaving a scar behind, whilst, at the same time, a fresh infiltration of the same character, and with a tendency to pass through a like course, takes place at the periphery; or absorption ensues, beginning at the centre, it becomes depressed, ultimately disappears entirely, and a cicatricial atrophy of the affected portion of skin remains behind. Moreover, a syphilitic infiltration into the skin seldom permanently resists suitable local or general antisyphilitic treatment. The nodules of rhinoscleroma, on the contrary, even after many years' duration, do not show the slightest indication of any retrograde metamorphosis, of atrophy or degeneration, and resist most obstinately every plan of antisyphilitic treatment. If, however, there are already several nodules present, and if they evince, especially in their arrangement, the characters above described, and if the peculiar deformity of the nose and upper lip exists, then any confusion with syphilis is hardly likely to occur, even at first. For, amongst several syphilitic nodules, arranged circularly and close to one another, there will always exist, from the fact of the long previous duration of such an extensive infiltration, the indications mentioned of retrograde metamorphosis, ulceration or cicatricial depression in the centre of individual nodules or of the whole group. It is precisely on this remarkable and constant course of the disease, on its stability, that we base our opinion that rhinoscleroma has nothing in common with syphilis, but is a disease *sui generis*.

---

* See Kaposi (Moriz Kohn), 'Die klinischen und histologischen Charaktere der Syphilide' (Separatabdruck aus, Nos. 55-57, d. Wiener mediz. Wochenschr., 1870. And, Kaposi, 'die Syphilis d. Haut.,' 4to, mit 76 chromolithogr. Tafeln, 2 Lief., pp. 74-81. Braumüller, Wien, 1874.

We do not know how to explain the occurrence of traces, such as have been mentioned, of antecedent ulcerative and destructive processes in the mouth, throat, and larynx, which have been met with in a few cases. It is quite possible that in some cases the patient may have actually suffered from syphilis previously. In the five cases of this kind which came under our observation, neither the ulcer of the uyula, nor the very severe affection of the larynx and of the vocal cords, nor the cicatricial border along the velum, and the indurated projection of the posterior wall of the pharynx seemed to be of a syphilitic character. It would appear, therefore, probable, at present, that a pathological change, analogous to or identical with that which attacks the skin, may also invade isolated portions of the mucous membrane. Increased experience, alone, however, can throw any light on the latter point.

(2) *Keloid.*—To distinguish between rhinoscleroma and keloid located in the neighbourhood of the nose and lip is found practically to be very difficult. It is only the rhinoscleroma with a smooth, soft surface, and having a considerable resemblance to a hard disc, situated beneath the upper layers of the skin, which could be differentiated. For it must be almost impossible to diagnose a prominent, tuberous rhinoscleroma with a glistening surface, traversed by congested, dilated vessels, from keloid, which it also resembles in the stability of its tissue. The whole character of the disease must be taken into consideration in order to arrive at a diagnosis. A microscopic examination, however, would, undoubtedly, distinguish between the two. Keloid consists wholly of fibrous tissue;* rhinoscleroma would show the cellular infiltration described above.

(3) *Epithelioma.*—Rhinoscleroma closely resembles a tubercular, prominent epithelioma before any desquamation has occurred, and before it has ulcerated. We are of opinion, however, that the absence of the well-known marginal, transparent, glistening, mother-of-pearl-like ,vesicular-looking nodules peculiar to epithelioma, and of the general characters of the latter, will save the attentive observer from making any mistake. An ulcerated epithelioma loses any similarity to rhinoscleroma by the fact of an ulcer being present.

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* See Anatomy of Keloid, p. 281 of volume iii.

Treatment.

If the rhinoscleroma be left alone it grows to such an extent that it renders the nostril impermeable. On this account there is an urgent necessity for some treatment to be adopted. The removal of the impediment to respiration is the first consideration, the restoration of a sightly appearance is of secondary moment. An experience derived from the treatment of several patients, and of the same patient for months and years, has shown us that the local application of the so-called absorbents, of Emp. Hydrargyri, and of iodine (painted on), will set up a superficial desquamation of the epidermis, but will not in the least induce any softening or absorption of the new growth. The use of systematic inunctions of grey ointment, as practised in the treatment of constitutional syphilis, and continued for weeks and months, and the internal administration of iodide of potassium or of Zittmann's decoction for as long a period, have just as little effect.

The only plans attended with success are the destruction of the new growth by means of caustics, and its excision. By means of a stick of caustic potash, or of nitrate of silver, or of chloride of zinc and nitrate of potash, recommended by Bruns and Köbner, it is possible, without much trouble, to penetrate into the substance of the free, elevated nodules. The pain is moderately severe, the hæmorrhage very slight, and the reaction almost nil. By means of any of the caustics mentioned, we destroy and break down a sufficient portion of the new growth, and especially we bore a fresh channel through the middle of the indurated mass in the obstructed nostril at one sitting. If we use caustic potash the patient's head should be held forwards, in order to prevent any of the liquefied and very powerful potash from running through the posterior nares into the pharynx. In the course of three or four days, after the separation of the slough caused by the caustic, the remaining portion of the rhinoscleroma is exposed, and exhibits a pale red surface secreting thin pus, and becomes skinned over in a very short time. An ulcer is never formed in consequence of the cauterisation, nor does the remaining portion of the new growth show the slightest inflammatory reaction, nor does any tendency to involution make its appearance. There is only just so much of the new growth destroyed as has been directly killed by the caustic, neither does the remainder of the growth show any tendency to take on a malignant character, as we often see cancer become more malignant, after the application of any irritant. The artificial channel formed in the nostril for the passage of air must be kept open by the insertion of a sponge-tent or of laminaria. It is obvious that the destruction of the new growth may be effected by other means and methods of procedure, especially by the galvano-caustic. Unfortunately, however, any sort of cauterisation has but a temporary success. After the lapse of some months the nodules again enlarge, and, if the nostril be not kept open, may lead to fresh obstruction of the nostril, and this may repeatedly occur.

The indurated discs, which are not prominent but flat and covered with normal epidermis, and seem as if imbedded, are less easily penetrated by caustics. The latter are also less suitable, as this form of induration mostly attacks the upper lip or the skin of the ala nasi, and too great destruction of these parts would give rise to the formation of unsightly scars. In such cases, removal by the knife is indicated. A plastic operation may also be performed at the same time. We have, however, seen the disease recur after excision had been practised.*

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* Primarius Salzer performed such an operation on a young girl. He not only fully extirpated the tumour and filled up the gap by a plastic operation, but before he did the latter he removed a portion of the anterior surface of the alveolar process of the superior maxilla, the periosteum of which had been involved in the new growth.

At the end of seven months, the patient returned. We found a fresh nodule the size of a hazel nut developed on the remaining portion of the sockets of the upper incisor teeth, and extending to the scar in the lip resulting from the operation.

CHAPTER LIV.

(CLASS VIII.—DIV. III.—CONTINUED).

LUPUS ERYTHEMATOSUS.

History.

IN the year 1845,* Hebra described in the following terms, under the name "Seborrhœa Congestiva," a disease of the skin which had not previously been noticed in detail by any author: "*Seborrhœa congestiva,* the true nature of which, so far as I know, has never been described, and which, at the most, has only been superficially treated of by Fuchs, under the name Seborrhœa Adultorum, or Rayer, as Fluxus Sebaceus, or, lastly, by John Erichsen, in the 'London Med. Gazette,' Nov. 1845. In this disease we see the orifices of the sebaceous glands—mostly on the face, on the cheeks and nose, in a patch resembling a butterfly in shape—distended with secretion in the form of white points, not elevated above the level of the skin, and seated on a red, but not infiltrated, base. In a short time the secretion from the glands exudes on the congested patch of skin, in the form of small, white, scale-like bodies, having a greasy feel, and adherent by their surfaces. It gradually accumulates in considerable quantity till it attains the thickness of a line, and, at last, we have a sharply-defined, greatly congested patch, which is covered with scales, but neither itches nor weeps, nor is excoriated."

It was only after more advanced forms of the disease, and especially cicatrices resulting from it, were observed that Cazenave considered the affection ought to be ranked with lupus, and, in order to distinguish it from the latter, gave it the name of Lupus Erythematodes.† A similar experience induced Hebra also to adopt this name for the disease. It is true, as Cazenave and Chausit* stated, that Biett had already pointed out the malady under the name of Erythème centrifuge; or, in Hebra's† opinion, had regarded it as "dartre rongeante qui détruit en surface;‡ and that, in the same way, the Lupus superficialis of Thompson and Parkes§ appears to indicate the same affection. But it is also true that the clinical character of the disease was first demonstrated by Hebra, and subsequently, in accordance with riper experience, more fully detailed, and the disease more correctly named by Cazenave. This nomenclature and account of the characters of the disease has been accepted by most authors who have treated of the disease in clinical reports, or in works on dermatology, down to the present time; and although, in course of time, somewhat different views were inculcated by some,|| these either related to unimportant points, or were given up by their advocates after the appearance of the comprehensive and (even now) precise account which Hebra again gave of the disease in the year 1856 in his Atlas.¶

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* 'Zeitsch. der k. k. Ges. der Ærzte in Wien,' i. B., p. 40.

† 'Annales des Maladies de la Peau,' 1851, 3 ème-année, 3rd vol., p. 299.

Two forms of Lupus Erythematosus are there figured and described. Plate 8 represents the disease in the form of extensive, discoid, congested patches depressed in the centre, and having an elevated red border covered with black comedones. In plate 6, the disease is shown in the form of detached or aggregated, smaller spots of the size of lentils, rounded, congested, and having a depression or fine scale in the centre. In

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* 'Traité elémentaire des Maladies de la Peau,' Paris 1853, p. 304.

† 'Atlas der Hautkr.,' 1856, 1 Heft.

‡ Abrégé pratique des Maladies de la Peau, d'aprés les auteurs les plus éstimés, et surtout d'aprés des documents puisés dans les leçons cliniques des M. le Docteur Biett, par M. Cazenave et H. E. Schedel, Paris 1828, p. 386.

§ 'A Practical Treatise on Diseases affecting the Skin,' by the late A. T. Thomson, completed and edited by E. A. Parkes. London 1850.

|| Veiel, in 'Mittheilungen über die Behandlung chronischer Hautkrankheiten,' Stuttgart 1862, p. 107, treats of the disease under the title of 'Erythema lupinosum.' Erasmus Wilson thought, in the year 1863, that the disease might be syphilitic (Syphiloderma hereditarium faciei et capitis, in his work 'On Diseases of the Skin'), but subsequently (ibid., edit. 1867, and 'Journal of Cutaneous Medicine,' 1869, ii., 8, p. 362) adopted the same name and view of the disease as that taken by Cazenave and Hebra. Volkmann ('Sammlung klinischer Vorträge,' Leipzig 1870, No. 13, p. 67), falling back on Hebra's original designation, Seborrhœa congestiva, has proposed the name "Lupus seborrhagicus."

¶ 1 Heft, 1856, Text.

accordance with the experience at that time in our possession, Lupus Erythematosus is there said to be a local disease from its commencement to its termination, that is, a chronic inflammation or infiltration limited solely to the skin, and affecting chiefly the sebaceous glands and the parts immediately adjacent to them, ending in complete absorption, or in a cicatricial contraction of the skin, and not in any way affecting the patient's general condition, even after it has persisted for years. Since then, however, experience has shown that Lupus Erythematosus may not only extend more deeply locally, and be attended by altogether more severe pathological changes than was known of at that time; but that also various grave and even dangerous constitutional symptoms may be intimately associated with the process in question, and that death may result from conditions which must be considered to arise from the local malady.

Of late, therefore, Lupus Erythematosus has become a more important affection, and it has become necessary to modify, in some measure, the description usually given of the clinical character of the disease.*

The anatomical conditions met with in Lupus Erythematosus, described by Hebra from a clinical point of view, have also been more positively determined by the microscopic investigations of Neumann,† Geddings,‡ and myself.§

Symptomatology.—Local Symptoms.

Lupus Erythematosus always becomes developed in the form of slightly elevated spots, which are of the size of pins' heads or of lentils, isolated or arranged in groups, are of a bright- or dark-red colour, and pale slightly on pressure with the finger, but do not wholly disappear. The centre appears slightly depressed and paler, almost cicatricial, or is covered by an adherent, thin scale, which is greasy to the touch. The central scale with the red border at the periphery gives the spot an appearance somewhat resembling that of a favus cup.*

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* See my two papers: 'Zum Wesen und zur Therapie des Lupus Erythematosus,' in the 'Archiv f. Dermat. u. Syph.,' 1869, 1 Heft, pp. 18-41, and 'Neue Beiträge zur Kenntniss des Lupus Erythematosus,' ibid., 1872, 1 Heft, pp. 36-78, mit 1 Taf.

† 'Med.Wochenschr.,' 1863, and 'Œst. Zeitschr. f. prakt.,' Heilkunde, 1868.

‡ 'Sitzungsb. der k. Ak. d. W., ii. Abth., Märzh. 1868.

§ 'Arch. f. Derm. und Syph.,' 1872, 1 Heft, p. 73, and Taf.

As the small spots described always have the same characters, and are always present where Lupus erythematosus is commencing, we may designate them as its "primary eruptive spots." They make their appearance, first of all, almost without exception, on the face, and mostly on the skin of the nose, of the cheeks, of the eyelids, or of the ears. Now and then only one such spot may be present, at other times there may be several, isolated and scattered irregularly; frequently there are many of them from the very commencement. By close inspection it is easily seen that the centre of each spot corresponds to the mouth of a follicle, and the red areola to the part immediately surrounding it. If the adherent central scale is removed, a slender epidermic cone, which projected into the dilated follicle, becomes evident on its under surface, or if the cone be torn in removing the scale, the follicle is still plugged by it. The development of the primary eruptive spots is not, as a rule, attended by any local or constitutional symptoms. Occasionally, however, the eruption is associated with very remarkable secondary, local, and constitutional symptoms, as will be described more fully later.

From this stage of primary efflorescence, Lupus erythematosus may be further developed in a twofold manner. First, as characteristic large discs,† which I shall call the discoid form. Secondly, as disseminated and aggregated small spots,‡ of the character described, which I call Lupus erythematosus disseminatosus et aggregatus.

In the first form, a single spot of eruption enlarges in such a manner that the peripheral, somewhat elevated, red border advances outwards, whilst the central depression and the area resembling a cicatrix increase in size, at the expense of the older, smaller, red halo, and become more noticeable. When the spot has attained the size of a split bean, or of a sixpence, the contrast between the red, elevated border and the central, depressed, cicatrix-like portion—the discoid form of Lupus erythematosus—is, as a rule, well marked. In the course of many months, or years, the individual discs attain a considerable size; one, for example, may cover the whole of one cheek, or a great part of the hairy scalp. Moreover, some of the small spots may coalesce into a large disc, owing to those portions of their periphery which come in contact disappearing, and the skin either assuming a normal appearance at those parts, or becoming slightly cicatrised, whilst the peripheral portions of the several red, elevated, circular borders coalesce, and form a red margin covering a larger area. Developing in this way, Lupus erythematosus, at an advanced stage, consists, therefore, of a single disc, or of several, or it may be of a number of discs, of the size of a sixpence, of a half-crown, or of the palm of the hand. The border of each is of a bright red colour, half a line or a line in breadth, elevated, covered on the surface with yellowish-white, dirty scales and crusts, or is pitted, and looks as if it had been pricked or eroded. It feels firm to the touch, as if deeply infiltrated, and thus forms a distinct line of demarcation from the surrounding healthy skin. The punctiform apertures described in the elevated annular border are either plugged with black or yellowish-green comedones, or appear more open, gaping. They evidently represent the orifices of enlarged follicles. The portion of skin contained within the peripheral margin is slightly depressed, has a glistening white, or thin, cicatrix-like appearance, or is covered by thin, dry, parchment-like, or greasy-looking, white scales, or greasy, yellowish-brown crusts and scales.

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* Probably it was this external resemblance to Favus which led Veie to propose the name Erythema lupinosum for Lupus erythematosus.

† Hebra's Atlas, loc. cit., Taf. viii.

‡ Ibid., Taf. vi.

In this form, Lupus erythematosus is most frequently met with on the cheeks and on the bridge of the nose, the combination giving rise to a resemblance to a butterfly (Hebra), the body being formed by the lupus patch on the bridge of the nose, and the wings by the patches on the cheeks. Of course either part of this figure may be absent. This form of lupus may also occur on the tip of the nose, on the alæ, on the eyelids, the ears, the lips (the red margin of the lips), and the hairy scalp, in the latter situation often in great numbers, and spread over a large area, discrete or variously combined, and attended with total loss of hair over the part affected.

When the individual discoid patches have attained a certain size, they do not enlarge any more, but persist with only slight alteration for months and years, and ultimately disappear completely. The border becomes paler and flattened, and in its place there remains a superficial, cicatricial, parchment-like atrophy of the skin, just in the same way as the central portion of skin included within this margin had already undergone a similar change, or the involution over the whole extent of the lupus patch may be so complete that the skin may be entirely restored to its normal condition, and no trace of the former disease may be discernible. In one way or the other the malady disappears completely, or attacks, afresh, portions of skin which were not previously affected.

The progress of the disease, therefore, is exceedingly chronic, and a spot the size of a sixpence may take as many years to go through its course as several discoid patches of the size of the palm of the hand in another case. As a rule, patients do not experience any inconvenience from the malady beyond a local itching, or burning, and when the disease is situated on the face, the disfigurement which results from the presence of the disease and the superficial cicatrix which remains behind, and, when it is situated on the scalp, a permanent loss of hair over the parts affected. The patient's state of health, especially, remains quite undisturbed during the course of this kind of Lupus erythematosus, though it may extend over years. Nevertheless, even in the discoid form of Lupus erythematosus the course of the disease may exceptionally become unfavourable and of an altogether different character, if the aggregate form, to be described presently, and its symptoms are associated with it.

The second form of Lupus erythematosus is distinguished from the first, at its commencement, by consisting of many discrete or aggregated primary eruptive spots, and, during the whole of its further course, by its spreading only by an increase in the number of the "primary eruptive spots," which, therefore, on the one hand, appear more densely crowded together, and, on the other, cover larger areas of skin. As already mentioned, this form of Lupus erythematosus also becomes developed, so far as our present experience goes, first of all on the face, and, as a rule, gradually, but, occasionally, in an acute form, in the course of a few days.

The first eruption which appears on the skin after the lapse of such a short time only, does not by any means possess the characters of typical Lupus erythematosus, but consists of crusts of the size of pins' heads, or lentils, isolated or aggregated together, so as to form a large scab. It resembles an eczema acutum impetiginosum, and can only be distinguished from it on close inspection, by evidently consisting of separate crusts of the size of pins' heads, or of lentils. When an attempt is made to remove the crusts, however, it becomes evident that the centre of the under surface of each is connected by a cone with an enlarged follicle, and when the removal is completed, that red spots of the size of pins' heads, or of lentils, isolated and having a slight depression in the centre—the primary eruptive spots of Lupus erythematosus—are present.

If, however, the crusts are not interfered with, they become, in the course of a few days, flatter, more scaly, and oily-looking, fall off, and allow the primary eruptive spots of Lupus erythematosus, now exposed to view, to be recognised.

The disease, commencing in this way by an acute outbreak, or becoming developed gradually, may, afterwards, proceed slowly or be attended from time to time by renewed acute outbreaks.

In the first case, the Lupus erythematosus remains for a long time quite local, that is, confined to the neighbourhood of the face, cheeks, nose, eyelids, forehead, or red border of the lips, or ultimately also attacks the ears, various parts of the scalp, of the neck, of the arms, &c., or even the fingers and toes, always, however, in the same way that isolated or aggregated "primary eruptive spots" of Lupus erythematosus of the size of pins' heads or of lentils become developed, whilst, on the parts previously affected, corresponding superficial scars, of the size of pins' heads or of lentils, and resembling those resulting from acne or variola, remain behind.

In the second case, that is, when, at the commencement or subsequently, acute outbreaks occur, the disease usually becomes general, and then, in the course of a few days, or of one or two weeks, hundreds of spots of erythematous lupus become distributed over the trunk, on the flexor and extensor surfaces of the fingers, on the palm and back of the hand, on the arms, thighs, legs, elbows, and knees, both back and front, and, in fact, over almost the whole body. This acute or subacute eruption, which either occurs at the commencement, or appears as an exacerbation of an already existing Lupus erythematosus, is accompanied by very various local and constitutional symptoms, which appear, in part, to be in direct connexion with the eruption, and in part to be more remote, but not wholly accidental complications, both of them being undiscernible in the cases which have a persistently chronic course, at any rate, in the forms of discoid Lupus erythematosus which have been described. If an acute, general outbreak of lupus occurs during the existence of a discoid Lupus erythematosus, it is always in the form of discrete lupoid eruptive spots, and is not infrequently accompanied by the severe acute symptoms to be described. For this reason, even in a case of universally diffused Lupus erythematosus, either only discrete patches occur, or these are met with in a recent form, on the fingers and toes, for example, whilst, on the face, the older condition of the same form, the discoid variety, occurs.

Concomitant Symptoms.

The symptoms which may be associated with an acute or subacute eruption of Lupus erythematosus are—

1. Nodules of the size of hazel nuts or walnuts, which are situated deeply or in the subcutaneous cellular tissue, feel of the consistence of firm dough, are painful spontaneously and on pressure, and are covered by skin of normal colour, but pushed forward by them. In two or three days the nodules become less prominent, and circular, red spots, of the size of lentils or of pins' heads, scarcely becoming pale on pressure, and having in the centre of each an adherent, slightly depressed scale, with a prolongation into the orifice of an enlarged follicle, become developed on the corresponding portions of skin—the eruptive spots of Lupus erythematosus. When the latter are fully developed, the deeply situated cutaneous nodules described, also disappear completely in the course of a few days.

2. Œdematous, tubercular, painful swelling, of the consistence of firm dough, affecting the skin and the tissues around the joints of the metacarpus, of the fingers and toes, and also of the larger joints, of the knee, and elbow. Not infrequently, after the swellings mentioned have lasted for some days, spots of Lupus erythematosus become developed on the corresponding cutaneous surfaces, whilst the swellings and the pain which accompanies them disappear. Occasionally, however, they

undergo involution, without any fresh development of lupus being apparent.

3. Aching, boring, deep-seated pains in the bones, especially in the tibia, in the bones of the forearm, and of the metacarpus, nocturnal pains in the head and in the bones. Severe pains in the large joints frequently occur in the course of the disease, and are, occasionally, of a nocturnal character, causing the symptoms to resemble those of syphilis. These rheumatoid pains are very often precursors of a more or less extensive outbreak of lupus, which, however, does not always correspond to the parts which were painful. Frequently, however, no change whatever is discernible in the lupus itself in connexion with such affections. In three cases, in addition to a form of lupus of the face, which remains to be described, and many older and partly cicatrised eruptive spots of lupus scattered over the trunk, extensor surfaces of the metacarpal and phalangeal joints, the elbows and knees, we observed a general eruption, with very intense, local, exudative changes. On the trunk and on the extremities were spots of the size of lentils or of sixpenny-pieces, and occurring singly or in hundreds, over which the epidermis was elevated by hæmorrhagic effusion, so as to form flat blebs. In some places the blebs were isolated, in others three or four of them were arranged around a central bleb, so as to resemble the appearance of herpes circinatus (or iris*). On removing the loosened epidermic disc, there remained a corresponding, congested, excoriated, disc-shaped spot of the size of a sixpence, in the centre of which was a brownish-black point, which did not disappear on pressure with the finger—a hæmorrhage into the corium.

At the end of three or four days most of the blebs had dried up, and in their place, after the removal of the parchment-like, dried up epidermic covering, there remained the hæmorrhagic central portion, comprising an "eruptive spot" of lupus of the size of a lentil.

4. *Adenitis.*—Very large, hard, and painful swellings of the lymphatic glands, submaxillary, axillary, and, more rarely, inguinal, and of the parotid, especially, occur in certain cases of Lupus erythematosus, most frequently those in which the eruption becomes rapidly developed. Numerous spots of

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* See p. 378, vol. i.

Lupus erythematosus become developed in the skin stretched over the firmly infiltrated nodular tumours, of the size of fists. The intumescence of the glands named subsides, in great part, in the course of a few weeks, and again increases temporarily simultaneously with any aggravation of the other symptoms, associated with an exacerbation of the whole process. We only on one occasion saw suppuration occur in one part of a mass of enlarged glands in the left axilla.

5. *Erysipelas.*—This is a frequent and very important complication of Lupus erythematosus aggregatus. We have met with it in two forms. For the most part, erysipelas attacks those parts which are the seat of an acute eruption, and, at the same time, of the deep-seated, subcutaneous, œdematous swellings previously described. Having commenced with an attack of chilliness and febrile symptoms, the erysipelas spreads from these localities to adjacent parts, covering larger or smaller tracts. Erysipelas most frequently commences on some part of the face, or on the ears, and, therefore, in the situations most liable to Lupus erythematosus; more rarely, on some part of the thorax, back, mammary region, &c., &c. Occasionally, instead of the uniformly diffused redness and swelling associated with erysipelas, there is only a striped or streaky inflammation of the lymphatics over the mammæ, shoulder-blades, or other parts. This is, however, essentially of the same character. The fever accompanying the erysipelas corresponds in intensity and duration to the severity and extent of the latter. In certain cases, the erysipelas (and the whole of the symptoms associated with it) is of slight intensity and limited in extent, and, consequently, only lasts a few days. At another time, it attains such severity, and occupies so large an area, that the life of the patient is seriously threatened.

The subsequent behaviour of the Lupus erythematosus depends on the course which the erysipelas has taken. If the attack was but of moderate severity, and only lasted a few days, we not unfrequently observe an increase in the eruption of lupus at the starting-point of the erysipelas. If, however, the erysipelas was widely diffused (Erysipelas migrans), and, therefore, together with the fever accompanying it, lasted many days or weeks, the lupus, at the time of convalescence, will be found, in most parts, to have become quite pale, or to have undergone complete involution.*

Erysipelas frequently becomes developed in a second form, which I may designate as Erysipelas perstans faciei. This complication gives a peculiar and, in a certain sense, we may say, a typical character to the Lupus erythematosus.

The forehead, the eyelids, the anterior portions of the temporal and zygomatic regions, the nose and the adjacent portions of the cheeks, the upper lip, and possibly the lower lip, and a part of the maxillo-mental region, are swollen over a sharply defined area, abundantly studded with dirty, yellowish-brown crusts, which in some places are made up of thin, and in others, of thicker layers, are here and there firmly adherent, and in other places are loosened and peel off. At the first glance we might imagine that we have to deal with erysipelas faciei undergoing involution. If we look more closely at the local conditions, and especially if we take into consideration the extreme prostration of the patient existing at the same time—the typhoid condition—we shall soon become aware of the true state of affairs. The skin, more or less completely encrusted in this fashion, is of a dark-red colour, densely infiltrated, can only be pinched up between the fingers with difficulty, and is painful on pressure. Here and there, the skin is only thinly covered

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* We might suspect the erysipelas, occurring in the course of Lupus erythematosus, to be an accidental complication, due to the cauterisation employed in the treatment, and more particularly to the inflammation set up by the latter.

According to our own experience, however, it would seem that the treatment had nothing to do with the production of the erysipelas, but that, on the contrary, this was connected with the lupoid process itself.

As is well known, and as I have previously mentioned in my essay on Lupus erythematosus, already quoted, which appeared in the year 1869 ('Arch. f., Dermatologie und Syphilis,' loc. cit.), no caustic, properly so-called, is required for its suitable treatment. Energetic friction of the part with Spiritus Saponatus ('Seifengeist,' see p. 36, vol. ii.), or even solution of potash, may, perhaps, produce a superficial excoriation, but cannot cause a deeper destruction of the tissue.

In the treatment of Lupus vulgaris, on the contrary, according to the plan adopted here, very energetic caustics are used thoroughly and very frequently ; the patients affected with Lupus vulgaris have caustics applied twice a week, as a rule. Nevertheless, it is a very rare occurrence for any patient to have an attack of erysipelas under such circumstances, and it with scabs, and, on the nose and forehead, is dotted over with numerous pores (enlarged orifices of gland-ducts), which are wide open or filled with epidermic plugs. If we remove one of the crusts, the intensely reddened skin exposed to view is seen to have follicular openings on its surface, and a fatty glistening layer exudes from it, and in a few hours dries up into a thin crust.

The swelling and incrustation, just described, of the skin of the face, are well defined on the regions mentioned, and mostly marked off at a distance of $\frac{1}{4}''$ or $\frac{1}{2}''$ from the margin of the hairy scalp, where the dirty, yellowish-brown, elevated patch of skin, looking as if perforated with large pores, is bordered by irregular curved lines. The skin of the forehead immediately adjacent is quite pale and normal. In other parts, on the sides of the cheeks, for instance, the alteration in question is sharply defined, but the outlines are quite irregular; they correspond, however, in shape to individual "eruptive spots" of Lupus erythematosus. Isolated and aggregated spots of Lupus erythematosus are met with at a distance from the swollen and encrusted central region of the face, mostly on skin which is not affected with any further inflammatory changes, on the neck, ears, and hairy scalp, even on the fingers and toes, or, indeed, they may be scattered over the whole body. The patients, at the same time, exhibit the symptoms of a severe general febrile disease. They lie on their backs, have a hot, dry skin, dry, fissured tongue, general prostration, and are more or less

may even then have no connexion with the use of the caustic, either as regards its situation, the time of its outbreak, or its course.

This fact becomes more evident if, in addition to the active cauterisation employed in the treatment of Lupus vulgaris, we also bear in mind the large number of these cases which come under care, in comparison with the small number of the cases of Lupus erythematosus. Within the space of five years (1866-70) 279 cases of Lupus vulgaris were treated in the clinique, and only 22 cases of Lupus erythematosus; and of 15 females who were affected with Lupus erythematosus, 9 had erysipelas repeatedly, and 3 died during its course.

Moreover, it must be noted, in opposition to any objections which may be raised in this direction, that erysipelas, unquestionably, often makes its appearance without any treatment having been previously adopted, and, indeed, commences at a part where a more acute development of the lupus spots has taken place, and especially when this is associated with that œdematous swelling of the deeper tissues which has been described.

unconscious. In the course of 2–3 weeks death ensues, being preceded by increased mental disturbance, coma, sopor, or by pleuro-pneumonia; or the fever vanishes, the tongue becomes moist, the swelling of the face diminishes, the crusts fall off, and the patients recover—except from the Lupus erythematosus, which remains. The erysipelas, in one or other form, usually attacks the same individual repeatedly in the course of the Lupus erythematosus, which lasts for years. On account of the possible results mentioned, erysipelas occurring under such conditions is to be regarded as having a much graver significance than is usually attributed to it when occurring on the face.

General Symptoms.

More or less fever of an irregularly remittent type is almost constantly associated with acute or subacute eruptions, whether they are accompanied by severe or slight local symptoms. It is scarcely ever absent when there is erysipelas, and assumes a typhoid character in the cases of Erysipelas perstans faciei mentioned, attended by general prostration and disturbed consciousness, resulting in coma or sopor, or complicated with pleuro-pneumonia, and ending in death, or, in spite of these complications, in recovery, except as regards the Lupus erythematosus remaining behind.

Chlorosis, tuberculosis, and anæmia may be considered as complications of Lupus erythematosus, inasmuch as they not only exist in combination with it, but also seem to alternate in association with it. Whenever the lupus becomes noticeably aggravated, a deterioration in the general state of the nutrition of the patient, dysmenorrhœa, amenorrhœa, or an increase in the catarrh of the apices of the lungs may be detected. Whenever, on the contrary, the general condition improves in consequence of appropriate treatment, the local treatment of the existing Lupus erythematosus will also be attended by greater success, and fewer or no exacerbations will occur. The variously complicated acute and subacute eruptions described, either appear as such at the commencement of the attack of Lupus erythematosus, and persist with slight remissions for several weeks or months, till the death of the patient follows in association with the typhoid type of fever, and the Erysipelas perstans faciei, or till the process assumes a milder form in association with an improvement in the local and constitutional symptoms; or they appear as exacerbations of Lupus erythematosus discoides, or aggregatus of the face, which has existed for months or years. In such cases the attacks of the acute eruption and the symptoms accompanying them are of various duration and intensity, and extend over some days or even a fortnight, and recur repeatedly in the same patient in the course of months or years. Moreover, under such circumstances we have seen isolated, acute exacerbations associated with symptoms threatening the life of the patient, or even resulting in death.

Prognosis.

In relation to prognosis we must bear in mind all those points which seem essential in the foregoing account. These are—

1. Lupus Erythematosus appears in two different forms:

(*a.*) In the form of characteristic discs—Lupus erythematosus discoides.

(*b.*) In the form of peculiar, isolated, and aggregated spots—Lupus erythematosus discretus et aggregatus.

2. It, for the most part, develops very slowly, and has a very chronic course, and, under such circumstances, does not exercise any injurious influence whatever on the constitution.

3. Lupus erythematosus may, however, make its appearance and continue its course accompanied by symptoms of a widely diffused or universal, acute or subacute, eruption attended by fever, and may then often, by the intensity of the local and constitutional symptoms, affect the whole organism and endanger the patient's existence, or even prove fatal.

4. Lupus erythem. disc. is confined, with scarcely any exception, to the face and head, has a regular and chronic course, and is unattended by any severe complications, but may, nevertheless, now and then, be complicated with erysipelas, or with the aggregated form and its acute symptoms.

5. Lupus erythem., whilst having undoubtedly a chronic course, is often attended by acute eruptions, either at its commencement or during its further progress.

6. All those severe local and dangerous constitutional

symptoms, which have been mentioned in the foregoing as accompanying the acute eruptions of Lupus erythematosus, must, therefore, be attributed chiefly or almost entirely to the second form of Lupus erythematosus, and this must consequently be regarded as the more doubtful in regard to prognosis.

7. The two forms of lupus are, however, intimately related to one another, as is apparent from the fact that the primary "eruptive spots" are the same in each; for, on the one hand, the discoid form consists wholly of such primary eruptive spots, and, on the other hand, the aggregated form is always added to the discoid Lupus erythematosus whenever a more acute or more extensive development of the process, as a whole, takes place.

8. When confined to one situation and only spreading slowly and locally (for example, on the face or on the head generally), Lupus erythematosus occurs, for the most part, therefore, in the discoid form, more rarely in the discrete form. When widely diffused and associated with acute eruptions (mostly, therefore, occurring on the trunk and on the extremities), it is always met with in the form of Lupus erythematosus aggregatus, and it may either exist in this form exclusively, or in combination with a previously existing discoid lupus.

The prognosis in regard to the probable success of treatment is consequently more favourable in the discoid form, and Lupus erythematosus having a uniformly chronic course, than in the aggregated Lupus erythematosus associated with acute exacerbations.

Etiology.

We are unable to adduce any very satisfactory data bearing on the question of the cause of Lupus erythematosus, but there are certain points which seem worthy of notice. In some cases, we recognise a distinctly local cause for the Lupus erythematosus, *i.e.*, a severe local seborrhœa.* It is well known that now and then, after an attack of variola, in which the face has been affected, a more copious secretion is poured out from the sebaceous glands for weeks or months, causing the skin of the face always to appear as if oiled, and, on the nose, cheeks, and forehead, to be covered occasionally with thick layers of sebaceous scales. These masses of sebum now and then attain such bulk that the nose, for instance, appears twice its natural size; just as if a tumour of a dirty-yellow colour were growing on it, and the patient cannot get rid of it, for he himself—and even many a physician—is afraid to touch the mysterious "outgrowth" on the nose. A little oil and soap suffice to remove the accumulated masses. If we slowly raise the sebaceous crust with forceps, we observe on the under surface some conical processes which projected into the enlarged orifices of the sebaceous glands. The parts surrounding the orifices of the follicles are reddened or even excoriated. The condition, therefore, represents a "Seborrhœa congestiva" (Hebra), as evinced by the chronic congestion around the orifices of the follicles, the dilatation of the latter, and the persistent hyper-secretion from the glands. If we persevere with the inunction of oil and the washing with soap, the margins of the follicular orifices become skinned over, the congestion around them diminishes, they themselves contract, the secretion of sebum becomes less copious, and the skin returns to its normal condition, both as regards appearance and function. In some cases, however, after the removal of the sebaceous crusts, we notice, here and there, around a dilated follicular orifice plugged with a yellowish, fatty, epidermic mass, a well defined red areola, which is traversed by dilated vessels, is somewhat prominent, and, together with the depressed, scaly centre, decidedly resembles a primary eruptive spot of Lupus erythematosus previously described. In other parts, there are groups of these primary eruptive spots, and in others, there are small or large, well-defined discs, of the kind met with in Lupus erythematosus; in short, we find that in an individual who was perfectly healthy before the attack of variola, a well characterised Lupus erythematosus has suddenly made its appearance in its primary and more advanced stages and diffused over an extensive area, and which, in such cases, must unquestionably have been developed, in an acute form, from a severe seborrhœa.

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* See my paper, 'Arch. f. Derm. u. Syph.,' 1859, p. 22.

Lupus erythematosus which has originated in this way subsequently represents an independent disease and goes through the same course, is liable to the same secondary changes and complications, and is just as obstinate as if it had been developed under any other circumstances.

With the exception of this single, unquestionable, local mode of production, we can only adduce general influences as causes of Lupus erythematosus, and these merely by way of conjecture.

Age and Sex.—The disease is most commonly met with after the eighteenth year.*

Lupus erythematosus is scarcely ever met with at an advanced period of life, not even in cases where it has been present at an earlier period. I do not recollect myself to have seen a single such instance. Women are much more liable to the disease than men, and the more severe forms of Lupus erythematosus are also met with more frequently in them.†

Chlorosis, anæmia, seborrhœa capillitii, dysmenorrhœa, and amenorrhœa, are very frequently met with in females affected with Lupus erythematosus, and sterility is also met with as a rare occurrence. We not unfrequently find chronic catarrh of the apices of the lungs and incipient pulmonary tuberculosis. Whether these conditions should be regarded as causes, or rather as consequences of the Lupus erythematosus, it is very difficult to decide. A mutual relation between the two can only be shown to exist so far as this, that we find by experience that the local affection (lupus) ceases to spread, or yields more readily to treatment simultaneously with any improvement occurring, either spontaneously or as the result of treatment, in the existing complications, whilst, on the contrary, an exacerbation and greater intractability of the lupus are associated with any change for the worse in the other symptoms.*

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* I once saw Lupus erythematosus in a boy three years of age.

† Thus, within the space of five years, 22 patients came under care, in this Hospital, for Lupus erythematosus, and 7 of them were males and 15 females. Moreover, the former were only affected with a thoroughly localised, discoid L. erythematosus, having a persistently chronic course, and erysipelas was only met with once as a complication; whilst, among the 15 female patients, the disease, in 10, was widely, or even universally, diffused, and took the aggregated form; in 8 cases there were severe symptoms of local inflammation and infiltration; and in 9, erysipelas occurred: in all these there were repeated acute outbreaks. We met with the peculiar form of Lupus erythematosus of the face, which owes its character to Erysipelas perstans faciei, in 6 patients, and, in 5, it was accompanied with febrile symptoms of a typhoid character ; frequently recurring rheumatoid and nocturnal pains in the bones, in 4 cases; swelling of the glands, in 3 cases; hæmorrhages in the situation of the lupus eruption, in 3 cases; hæmorrhagic blebs, in 2 cases; pleuro-pneumonia, in 4 cases ; and 3 patients died during the existence of the complications named.

The autopsies revealed pleuro-pneumonia in two cases, and tuberculosis pulmonum in the third; and, in addition, in two of the cases, effusion into the arachnoid cavity, and atrophy of the cortical substance of the brain (Hydrocephalus acutus), and, in the third, fatty and amyloid changes in the liver.

Anatomy.

Hebra was the first to point out the chief anatomical seat of those lesions, which form the essential features of Lupus erythematosus, since he mentioned, as its characteristics, the inflammatory changes around the sebaceous follicles, the dilatation of their excretory ducts, and the increased and altered secretion from them evinced by the accumulation of sebaceous and epidermic plugs in the dilated ducts.

Hebra, therefore, from the first, that is, since the year 1845, has regarded the disease of the sebaceous glands as the most essential characteristic of Lupus erythematosus. That this was his conviction is unmistakeably evident from the designation "Seborrhœa" congestiva, which he originally gave to the disease, and also from his description in the text to plates vi. and viii. of his Atlas (Heft 1). At the same time, however, Hebra did not omit to notice the fact that the morbid processes in question do not represent a superficial and transitory disturbance of nutrition, for he included the secondary cicatricial atrophy of the skin (tissue) around the follicles and of the sebaceous glands and hair follicles themselves among the characteristic features of Lupus erythematosus.

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* There is a female patient now under care at Blackfriars, for Lupus erythematosus, in whom the disease probably began when she was 51 years of age. She is now 58, and says that she never had any patch whatever till seven years ago.

It is interesting that her niece (a brother's child) is also attending for a similar affection. In both, the patches are characteristic, and are limited to the right cheek and side of the nose. The second patient is 28 years of age, and has noticed the disease for seven years. I am told that her father (the brother of the elder patient) was under Mr. Startin's care for "Lupus" of the face. It did not "eat away the cheek." He is now dead ("consumption"). A sister of his (and of the elder patient) "died of consumption." The two patients appear in good health.—Tr.

The microscopic examinations of portions of skin affected with Lupus erythematosus which have been undertaken of late years have entirely confirmed Hebra's views as to the predominant pathologico-anatomical conditions met with in this disease, and have given them a more precise form, since they have, at the same time, afforded us a clearer insight into the character and course of these inflammatory processes. The results of the examinations undertaken by Neumann, Geddings, and myself may be stated as follows:

In the stage characterised by the presence of the deep-seated, painful, œdematous nodes mentioned, which so often precede the development of the eruptive spots of lupus, there exists an enlargement of the sebaceous glands and œdema of the connective tissue, and dilatation of the blood-vessels around them, caused by swelling of their enchymatous cells. When the nodes are more superficial, dilatation of vessels and œdema of the tissue may be also recognised in the papillæ around the orifices of the hair follicles and of the ducts of the sebaceous glands, causing the former (the papillæ) to appear separated from one another, and enlarged. In a more advanced stage we find, in addition, cellular infiltrations in the meshes of the connective tissue surrounding the glands and the follicles. The cells have large nuclei, easily stained with carmine. In well characterised eruptive spots of lupus, the papillæ and corium around the follicles are so abundantly infiltrated with the cells mentioned that the vessels and the bundles of connective tissue can only be indistinctly traced, and the enlarged papillæ appear ill-defined towards the corium. In places where there exists a superficial depression in the centre of the eruptive spot, indicating that atrophy of the tissue has occurred, the infiltrated cells appear less transparent, owing to the presence of fatty molecules in them, and the intercellular substance appears opaque and shrivelled. Lastly, in places where the disease has wholly run its course, we find atrophy of the vessels, epidermic degeneration of the outer root-sheaths of the hairs, the latter being deficient in pigment, and easily separated from their follicles, degeneration and shrinking of the sebaceous glands and shrinking of the connective tissue. In the case in which the eruptive spots of lupus developed under hæmorrhagic blebs, and were associated here and there with punctate hæmorrhages in the corium, I found, in addition to the changes already mentioned, an essential alteration in the sweat glands, and abundant infiltration of cells in their neighbourhood.*

The anatomical conditions just detailed may, perhaps, in some measure assist in explaining the clinical features of the local changes. They tend to show that Lupus erythematosus is an inflammatory process,† which is characterised by its being originally located around the sebaceous glands and the hair follicles or the sweat glands, and by its terminating either in resolution and complete *restitutio in integrum,* or by cicatricial atrophy of the affected tissue. This atrophy is preceded by fatty and waxy degeneration of the elements of the tissues involved.

At the commencement of the process, accumulations of cells occur around the glands mentioned, associated with symptoms of inflammation, dilatation of the vessels, œdema of the connective tissue in the deeper part of the corium (nodes), and in the superficial layers (red spots), proliferation of the gland-cells (seborrhœa), exudation of serum and bloody fluid between the layers of the epidermis (formation of blebs), and effusion of blood into the corium and the papillary layer (extravasations).

There is no doubt that the slighter forms of the affection may undergo complete involution. For the most part, however, the fatty, molecular cloudiness of the cells of the rete and the formed elements resulting from inflammation, makes its appearance, and, it would seem, very quickly, and a similar or hyaloid degeneration of the connective-tissue elements of the papillary layer also ensues, in consequence of which they, in part, become reabsorbed, and, in part, shrivel up. It is in these situations that the cicatricial depression of the skin occurs. These metamorphoses of the glandular elements and of the surrounding connective tissue cause the destruction of the hair follicles (shedding of the hair) of the sebaceous glands, and of the sweat glands, and lead to atrophy and obliteration of the previously dilated vessels. The lobules of fat-cells have also disappeared by this time. Thus the final result of the process is a complete cicatricial atrophy of the affected portion of skin.

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* See 'Arch. f. Derm. u. Syph.,' 1872, 1 Heft, Taf. This also explains the occurrence of Lupus erythematosus in the palm of the hand, where there are no sebaceous glands; a circumstance previously almost incomprehensible.

† Lupus erythematosus ought therefore to be treated of under another section of our system. We have not, however, thought it advisable to depart from the usual custom of classing Lupus erythematosus with Lupus vulgaris, but we must state that the two processes are essentially quite distinct from one another.

Treatment.

Our treatment of Lupus erythematosus is not directed to the restoration of a portion of skin which has undergone cicatricial atrophy to its normal condition, nor to rendering follicles which have been destroyed again capable of fulfilling their functions, nor to the reproduction of hairs on the patches of skin rendered bald by the atrophic processes mentioned. Our object is attained if, on the one hand, we can cause involution of the process to take place, while still in the stage of inflammation (red spots, red margins of the cicatricial centres), and, in this way, check the further advance of the disease locally, and, on the other hand, if we can counteract the constitutional predisposition to repetitions of the inflammatory process named (fresh outbreaks). Fortunately, both ends may often be attained, and, now and then, in a short space of time, but mostly only after continual efforts and painstaking on the part of the physician, and suffering to the patient, extending over months or years. Since we have become acquainted with this peculiar disease, the most varied internal and external remedies have been employed in its treatment, the result being to make it probable that scarcely any of the former exercise any influence whatever on the progress of the disease, or on the predisposition to its recurrence or to its further extension, and that only external remedies are of any avail.

Internal Treatment.

Indications for the use of internal remedies are afforded by the frequent coincidence of more or less well marked symptoms of so-called scrofula, more especially enlargement of the glands, chlorosis, tuberculosis, catarrh of the apices of the lungs, a defective state of the general nutrition, and the experience that diminution and improvement of the cutaneous malady in question is usually associated with a similar behaviour of the constitutional conditions mentioned. The older patients, also, affected with this disease are often badly nourished, chlorotic, or tubercular. We therefore administer feruginous remedies in all varieties of form and dose, cod-liver oil with and without the addition of iodine, and, in some measure as a specific, arsenic in the form of Fowler's solution, or the Asiatic pills, or the Liquor ferri vinosi arsenicalis (a mixture of steel-wine and arsenic, a tonic), recommended by Erasmus Wilson in the treatment of many diseases of the skin; we can also advise tonic treatment in general and attention to hygienic conditions; in summer, the use of whey, cold baths, the cold-water cure, residence in a mountainous district, &c. We have, indeed, never seen a cure result in Lupus erythematosus from any of these remedies. We must, however, acknowledge that they may be used in conjunction with local treatment, with the view of improving the state of the patient's constitution, and restoring his system, as a whole, to a normal condition, because experience confirms the idea that, by this means, the further extension, or a recurrence of the lupus may possibly be avoided. In a few cases we have administered iodide of potassium internally for a long period, and repeatedly. We were induced to try this remedy owing to the severe rheumatoid pains in the extremities and in the head, of which the patients complained for several days in succession. The iodide of potassium neither caused any alleviation of these pains, nor prevented acute outbreaks of fresh spots of lupus, nor promoted the absorption of those already existing, nor prevented their further extension. With the same object in view, we have tried inunctions of grey ointment, as used in syphilis, but without success, and we were ultimately compelled to have recourse to narcotics internally and subcutaneously to subdue the pains.

Local Treatment.

A direct and marked curative influence can only be produced on Lupus erythematosus by the appropriate use of external remedies and modes of procedure. Numerous as these are, we must state at the outset that there is no single remedy, amongst all those which have been recommended and tried in the treatment of Lupus erythematosus, which avails for all cases, or even for the same case throughout. It must be borne in mind, therefore, that the disease under discussion is a most intractable one, for comparatively very active and frequently repeated local treatment often does not produce the slightest good effect, or, when the local effect of the treatment has passed away, the disease quickly breaks out afresh in the immediate neighbourhood (advancing peripherally), or at a distance, and thus, in spite of energetic local treatment, the lupus steadily increases. We must also bear in mind the fact that, though a very tedious process, the spontaneous involution of lupus leaves only superficial, thin scars. For this reason our choice of caustics is so far limited that we must only use such as are not followed by deeper and more disfiguring scars than those left by the disease when it undergoes spontaneous cure. In other words, we are compelled, in consequence of the circumstance mentioned, to use remedies which only act superficially, and the more repeatedly in proportion as they act less energetically and deeply. The long time required for the treatment by any method of procedure will be obvious from what has been said, and also from the circumstance that we must wait to see the effect of one application before we proceed to make another. A physician who has had practical experience in this matter, therefore, will never mention a shorter period than six months as likely to be taken up in the treatment, for he will be well aware that, though occasionally a complete cure may result in a few weeks, at another time the treatment may extend over a year or more. It is also worthy of note that each remedy and method of procedure enumerated further on has been found thoroughly efficacious in the treatment of Lupus erythematosus, but that this statement only applies to particular cases, since a method which has been put to the test in a number of cases successfully will leave us in the lurch in the very next case, and some other plan will be found more efficient. Bearing this fact in mind, we will now mention in detail the local remedies which may be recommended, and which we have employed in the treatment of Lupus erythematosus.

Spiritus Saponatus Kalinus.—It is well known that Hebra has recommended the use of an alcoholic solution of potash-soap in the treatment of skin diseases instead of the officinal spirituous solution of soda-soap. The formula is as follows :—

Rp. Sapon. Viridis unc. quatuor, Spir. Vin. Rect., unc. duas, diger. per horas quatuor et viginti, dein filtra et adde Spir. Lavand. drachm. duas. The lupus patch is thoroughly well washed with this spirit of soap by means of a dossil of charpie. The soap and the alcohol loosen the firmly adherent fatty flakes of epidermis which are met with in part on the red margin of the lupus patch, and more especially on its pale and partially cicatrised centre. After the washing with the spirit of soap, we see the free, dilated orifices of the follicles, and the excoriated papillæ, at their margins, at first covered with red, bloody points, and, in a few minutes, with large drops of serum which have oozed out, and are either clear or tinged with blood. The secretion dries up into yellowish-brown crusts, which fall off in a few days. At this stage even, occasionally, we may detect a considerable improvement. The orifices of the follicles are less gaping, the margin of the lupus patch is less raised, less red, and the dirty yellow fatty scales accumulate in smaller quantity. The washing is repeated as soon as the crusts (dried-up serum and blood) produced by the cauterisation fall off. The separation of the crusts may be hastened by the application of some emollient salve, for example, ung. emolliens.* By persevering in this application of Spirit. sapon. kalin., we may occasionally cause a lupus patch of the size of a split bean, or of a half-crown, which has existed for years, to disappear completely within a few weeks, so that in a few fortunate cases not even the slightest trace of the previously existing disease remains. The possibility of a cure occurring without any trace of a scar remaining, the slight pain caused, the ease with which the application can be made, and the absence of any danger attending it, afford sufficient reasons for commencing the treatment of Lupus erythematosus in this way. If the plan fail, we may possibly have lost a little time, nothing in any way of real moment, and we then use more active remedies. The spirit of potash-soap is more especially adapted for cases of Lupus erythematosus, which are of comparatively short duration, in which the patches are not very extensive, and are situated on thin portions of skin, on the eyelids, for instance. The disadvantage attending ever so slight a scar on the eyelids demands great circumspection in the choice and employment of remedies, and, therefore, in such cases, especially, the Sp. sap. kal. should always be tried first of all. In the cases in which L. erythematosus has manifestly originated in a seborrhœa congestiva, as after variola, for instance, we may also specially recommend the use of the spirit of potash-soap. It is also very serviceable, in conjunction with the use of any other remedies, during the whole course of the treatment of lupus in general, for the removal of scales and crusts, the so-called "cleansing" of the diseased parts of skin. It is also advisable to have recourse to simple washings with Spir. sapon. kalin. after any more energetic procedure, that is, after the disappearance of the symptoms of inflammatory reaction, which may have been produced by more active treatment, because experience has shown that after cauterisation with a concentrated alkali, for instance, such an improvement may result (that is, such a change in the (local) morbid process may occur), that the effect of the Spir. sapon. kal., alone, may be quite sufficient to complete the cure. More than this, it is directly indicated, because this remedy causes the least possible cicatrisation.

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* See vol. ii., p. 148.

Sapo Viridis, Soft Soap.—It is obvious that, like the spirit of soap prepared from it, soft soap itself may be advantageously used for washing the lupus patches; not merely, however, as commonly supposed, for "cleansing" purposes only, but also as a slightly caustic agent, since the soft soap invariably contains a not inconsiderable quantity of free, non-saponified potash. If the patch of lupus be energetically washed and rubbed with the soap once or twice a day, the same result is obtained, at last, as with the Spir. sapon. kal. Weeping, excoriated red points are seen, which correspond to the orifices of the follicles and to the papillæ adjacent to them, and on which yellowish-brown crusts form. These fall off in a few days, and the lupus patch may be less raised and paler, in short, an improvement, or partial cure, may result. In order to produce a more active maceration and cauterisation, the soft soap may be used in the form of a cataplasm. The soft soap is spread like an ointment, and as thick as the back of a knife, on layers of flannel, and then applied. It is changed according to circumstances, in 12 or 24 hours, and within this space of time, or in 2–3 days, a uniform and general excoriation, or even a superficial eschar, is produced over the whole of the patch of lupus. The skin is covered with a yellowish-white, diphtheritic layer, and, after this is thrown off, or even from the first, is uniformly excoriated, red, weeping, swollen, painful, and slightly inflamed. After the use of some simple (indifferent) treatment (such as cold, moist applications), for some days, the inflammatory symptoms subside, and we are able to demonstrate the curative action of the cauterisation by means of the soft soap. It is shown by the border of the patch of Lupus erythematosus being flatter, paler, and smoother.

Concentrated Solution of Potash.—A drachm of caustic potash, dissolved in two drachms of distilled water. After carefully removing the crusts and fat, a bit of charpie is dipped in the solution, and the patch of lupus, and especially the elevated border, cauterised with it until excoriation and a white eschar are produced. After 3–5 days the eschar and the crusts formed by dried serum, blood, and glandular secretion, fall off, and we may then watch its further effect before making another application, or we may renew the cauterisation with the potash solution several times in succession, at intervals of 3–5 days; each time when the scab has fallen off and the new epidermic covering is almost complete. This plan is particularly suitable when the border appears much raised and indurated.

Pure Liquid Ammonia.—This acts in a similar way to the last, but less certainly, and is unpleasant owing to its smell. It may be employed in the same manner as the concentrated solution of potash. There is no special indication for its use in comparison with the potash. Experience shows that, whilst the solution of potash has, in most cases, a more or less extensive and energetic action, ammonia very often takes no effect whatever. Nevertheless, it may happen that in any particular case a single application of ammonia may be attended by more success than repeated cauterisations with solution of potash. The immediate caustic action of the ammonia appears to be the same as that of the potash. Apart from the result of the application being less frequently successful, the pungent odour which affects both eyes and nose severely, is a reason for the infrequent use of ammonia in the treatment of Lupus erythematosus.

If alkalies have been used for a long time without any corresponding, or, at least, without any decisive advantage, both the patient and the physician will at last wish for some radical change in the plan of treatment, and, therefore, the use of alkalies is given up for that of *acids*. Obviously, only those acids appear suitable, *à priori*, which do not cauterise deeply, and, therefore, do not leave any thick scars behind. For these reasons, concentrated acetic acid, concentrated hydrochloric acid, and carbolic acid appear adapted for use. The action of all these acids on Lupus erythematosus is very precarious. It cannot be denied that, occasionally, the employment of one or other of the acids named causes a portion of the elevated peripheral border of the lupus patch to become paler and flatter, that generally, in this way, the continuity of the peripheral border becomes interrupted, which, in relation to the further advance of the lupus as a whole, must be considered a favourable symptom. But the part of the border which remains resists the further caustic action of the acids named so obstinately, that ultimately their employment has to be given up. It is only small, flat patches of lupus of no long standing, which may occasionally be cured with these acids alone.

From *Carbolic Acid*, especially, very good effects have been expected in the treatment of Lupus erythematosus. It invariably only cauterises superficially, and, therefore, possesses one of the principal qualifications necessary for employment in the treatment of this disease. We have used it very frequently in the course of some years, but cannot speak so highly of its efficacy as some others have done, even in reference to Lupus vulgaris. Whether the acid be used in crystals or in the condition of a thick fluid, into which it generally passes very quickly by absorption of water from the atmosphere, it invariably quickly acts on the healthy skin, and on the diseased parts only after prolonged friction and pressure, because it combines more quickly with dry epidermis than with the fatty cells of the diseased sebaceous glands. A bluish-white, thin, dry scab is formed, which adheres firmly and remains for many days without falling off. This is unfortunate, as much time is lost in waiting for the carbolic acid scab to separate. By means of emollient applications, lard, unguent. emolliens, &c., the removal of the scab may be hastened. Cauterisation with carbolic acid also causes very severe burning pains, which continue to increase for two or three hours after the application, and persist for many hours. The pain is not relieved either by cold, applied dry or moist, or by warm applications. A powder,* starch, sprinkled over seems most efficacious in relieving the pain, which occasionally exists to a very alarming degree. The skin adjoining the cauterised part is reddened, very hot, moderately swollen, and very painful on pressure. Cauterisation by means of carbolic acid has, therefore, many drawbacks. On the other hand, its action on Lupus erythematosus is constantly followed by not inconsiderable advantage. After the scab has fallen off, the margin of the lupus appears flat, paler, smooth, and interrupted here and there, as if washed out, in short, it is evident that decided improvement has resulted. We may apply the caustic two or three times in succession. In this way we may completely cure isolated lupus patches. In cases where there are a number of small, scattered patches of lupus, the use of carbolic acid is strongly indicated, because it never acts deeply, and, therefore, never leaves any deep scars behind. We may, also, often have recourse to the use of carbolic acid, as to any other of the milder caustics, after the effect of any more energetic application has passed away.

Strong Acetic and strong Muriatic Acids.—Both act only superficially as caustics, and are therefore well adapted for use in L. erythematosus. Their action is more certain the more thoroughly the diseased parts are freed beforehand from the accumulations of scales, crusts, and oily matters, and rubbed clean by well washing them with soap, or the Spir. sapon. kal. We do not notice any marked improvement, however, as a rule, till after several applications have been made. These may follow one another tolerably quickly, as the scab caused by the acids named is very thin, and is soon thrown off. According to our own experience, acetic acid proves efficient more frequently than the hydrochloric acid. It is but rarely, however, that these weaker acids alone will suffice for the cure of lupus. This generally requires the application of more energetic caustics, but, in alternation with these, the acids named may frequently be used with advantage.

We have had but little experience as to the action of *Chromic Acid* on lupus. We have found, however, that the acid acts more deeply on the diseased parts than on the adjacent healthy parts. - The scab remains adherent for a long time, and the loss of substance caused is too considerable. A very conspicuous scar, therefore, is left.

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* "Streupulver," see p. 159, vol. ii.

Strong Nitric Acid.—It will seem surprising that, in the treatment of Lupus erythematosus, we recommend the use of a caustic which acts so deeply as nitric acid. We have already called attention to the fact that we should refrain from the use of similar caustics to the one just named, in order to avoid the production of deep scars. The changes in Lupus erythematosus are generally so superficial that any cauterisation which extends beyond the uppermost layers of the corium into its deeper layers or into the subcutaneous tissue, manifestly overshoots the mark. Nevertheless, the microscope, on the one hand, and clinical experience, on the other, have established, beyond all doubt, that the morbid process which constitutes Lupus erythematosus penetrates, in certain cases, very deeply, even as far as the subcutaneous cellular tissue, or may begin there, so that it may, *à priori*, be quite justifiable to produce such intense effects as those which may be caused by the use of nitric acid, for example, or other caustics to be mentioned presently. When Lupus erythematosus has existed for some years, the whole of a patch, or its border only, may not merely have the appearance of a somewhat elevated, red, pitted, firm swelling of the surface of the skin, but the induration and swelling may affect the skin throughout its whole thickness, and also the subcutaneous cellular tissue, so that the margin of a lupus patch in this condition feels like a thick, firm roll, elevated above the surface of the skin like a barrier, on the surface of which the ordinary characters of Lupus erythematosus, redness, scaliness, &c., are visible. In such cases, after all milder remedies have failed, we have recourse to caustics acting more deeply, and to nitric acid in particular. Anyone who has tried nitric acid under such circumstances will have found that its action does not quite correspond either to the fears or the hopes with which one might be inclined to look forward to its application. We have frequently applied nitric acid to patches of lupus. A thick, yellow scab was produced. The inflammatory reaction in the neighbouring parts was considerable, and the pain caused to the patient very great. After a few days the scab separated, and underneath was visible a red, slightly suppurating surface, which quickly healed over, leaving a superficial scar. In such cases, the part acted on by the caustic appeared quite healed. At another time, there only remained, here and there, a few punctiform scars, never exceeding the size of lentils, whilst, over the rest of the patch, the Lupus erythematosus reappeared in its integrity after the restoration of the epidermis, except, perhaps, that it was somewhat less noticeable. Not infrequently, however, we noticed a fresh lupus spot develop around the old one, in the form of an inflammatory areola, produced by the caustic, so that, after the cauterisation was completed, the patch of lupus had increased circumferentially by the breadth of the so-called reaction-border, though perhaps a portion of the centre was cured or improved. A similar rapid increase at the periphery not unfrequently follows any active cauterisation, and not merely the application of nitric acid. From what has been said, it will be evident that the use of nitric acid is sometimes both necessary and advantageous in the treatment of Lupus erythematosus, but that its application will rarely be required to be repeated, and never at short intervals. After applying it, we should invariably again have recourse, for some time, to the use of milder measures, in order to avoid making things worse, instead of better. The same may be said with regard to the use of

Sulphuric Acid.—This is still less trustworthy in its action, penetrating here and there, contrary to the wish of the physician, so deeply that great loss of substance is produced, and thick, prominent, unsightly scars are left. We cannot, therefore, recommend the use of sulphuric acid.

Iodine, especially in the form of the Tinctura Iodina of our pharmacopœia,* and in the form of the glycerine of iodine used by Hebra according to the formula: Iodi puri, Potassii Iodidi āā drachmam, Glycerrhini drachm. duas, has been employed repeatedly in the treatment of Lupus erythematosus. The concentrated solution of iodine in glycerine is rubbed into the diseased part by means of a brush, and a piece of gutta-percha tissue is fastened over the patch, in order to prevent evaporation of the iodine. The painting is repeated twice daily for 4–5 days. Even after the first application the part becomes painful, swollen, and reddened. After 8–12 paintings a thick, adherent crust will have formed. The part is left now without any treatment. After 4–5 days the inflammatory reaction has wholly subsided, and the epidermic layers, which have been impregnated and destroyed by the iodine solution, peel off in the form of parchment-like flakes. The epidermis of the cutaneous surface is continued, as is well known, uninterruptedly into the sebaceous follicles, and lines their inner surfaces. As the cuticle is separated from its bed, and desquamates over large tracts, the epidermic cones which pass down into the sebaceous glands, together with the epidermic sebaceous cells and fat-globules contained in the cones, are thrown off. The sebaceous follicles are thus wholly deprived of their contents. It may therefore happen, that, owing to the inflammatory reaction which is set up in the skin by the application of the iodine, the walls of the sebaceous glands are stimulated in such a way that the follicles become narrower, which cannot occur until they have been freed from the plugs which previously blocked them up. It is a fact that after a series of applications of iodine in the region of a lupus patch, the characteristic pores, the mouths of the sebaceous follicles, are less perceptible, the orifices of the follicles have become narrowed, the border of the lupus patch flatter, less red, in parts quite pale, as if it had been washed out, or quite eradicated, and the formation of scales is diminished; a marked improvement is visible.

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* One part of iodine in sixteen of spirit.—Tr.

The series of paintings with glycerine of iodine may be repeated twice or several times in succession, if the result seems encouraging, or they may be used in conjunction with other modes of treatment. It is also to be noted that in any case the iodine may be applied after the Lupus erythematosus has been quite or almost entirely checked, in order to complete the cure, to heal over the small residua, and to hasten the fading and diminish the swelling of the diseased patch of skin. Painting with tincture of iodine may be resorted to with the same object in view, and in the same way, except that in this case it is not necessary to cover up the part with gutta percha.

Sulphur, in a finely powdered state, or in the form of lac sulphuris or flores sulphuris, suspended in alcohol, or in alcohol and glycerine, may be applied to the patch of lupus, alone, or in combination with the application of acetic acid. In either case the sulphur adheres for a long time, the reaction and the subsequent desquamation of the epidermis follow in the same way, though not so uniformly as after the application of iodine, and the curative action of such an application of sulphur is correspondingly less uniform and less certain, though occasionally quite evident. Sulphur also possesses still less specific action on Lupus erythematosus than any of the other remedies which have been, or will be, subsequently, mentioned.

Nitrate of Silver, in substance, is contra-indicated in Lupus erythematosus by the very nature of the process. There are neither any moist granulations nor any deeply seated, circumscribed, compact, neoplastic structures to be destroyed, as is the case, for example, in Lupus vulgaris. We can only employ a superficial and diffused cauterisation by means of a concentrated solution of nitrate of silver, consisting of equal parts of water and nitrate of silver. We have found less result follow the application of the solution of nitrate of silver than, for example, after painting on glycerine of iodine. Probably because cauterisation with nitrate of silver on the somewhat fatty epidermis met with in Lupus erythematosus generally excites very little influence, and hardly any reaction. Nevertheless, after the oily matters have been properly removed from the skin by means of soap, cauterisation with solution of nitrate of silver will cause the otherwise healed patch of skin to become paler, just like iodine would.

Tar, on the contrary, acts most excellently. It may be used in the form of Oleum Rusci (from Betula Alba), Oleum Fagi, or Oleum Cadinum (from Juniperus Cedrus); it invariably causes thick layers of epidermis to be quickly thrown off, just as iodine does, and is followed by exactly similar signs of reaction. Tar should be applied in the same way as the iodine, in a series of 8–12 paintings, and under similar circumstances and indications. The energetic and methodical application of a mixture of tar and spirit of soap and washing with tar soap, or sulphur and tar soap (and also with iodine and tar soap), are attended occasionally with very great success.

Arsenical Paste (Hebra).—White arsenic and cinnabar are made into a paste, according to the following formula: Rp. Arsenici alb. grana quinque, Cinnabar. factit. grana quindecim, Ung. emoll. drachm. duas. This is spread on linen and applied for three days, until a bluish-black scab has formed beneath it. At the end of each twenty-four hours the application is renewed.*

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* See Local Treatment of Lupus Vulgaris.

In the course of the second or third day very severe pains, accompanied by swelling of the skin (œdema) of adjacent parts, set in and persist for 8–12 hours, and then suddenly subside, when once the whole thickness of the cutis has been cauterised through, or, at any rate, cease as soon as the paste is removed. The paste has this inestimable advantage, that it only destroys the diseased portions of skin and leaves the intervening healthy bridges and islands of skin wholly intact. For this reason, Hebra has, for many years, used this remedy in Lupus vulgaris. The superficial, circumscribed, cutaneous infiltrations which constitute Lupus erythematosus are destroyed by the paste and desquamate, and, after healing is accomplished, which occurs quickly, scars corresponding to the lupus patches remain which, though, as a rule, deeper than those resulting after the spontaneous involution of the disease or after healing, for example, after the application of Spir. sapon. kalinus, may, nevertheless, on the whole, be called superficial and but slightly disfiguring. The effect of the paste, however, *quoad locum* is almost absolutely certain. Nevertheless, on account of the comparatively deep loss of substance which necessarily results, we only have recourse to its use when milder remedies have had no effect.

Chloride of Zinc in solution has a very similar action to that of carbolic acid. It produces a white, superficial eschar, which adheres for a long time. In the solid form it is as little suitable for use as nitrate of silver in Lupus erythematosus.

Multiple Scarification or "puncturing," which has been strongly recommended by Volkmann (loc. cit.) in the treatment of Lupus vulgaris, and will, therefore, be described fully in the next chapter, has seemed to us to have a corresponding effect in the treatment of Lupus erythematosus, and Theodor Veiel* has written to the same effect. By its means alone, or in conjunction with the application of solution of nitrate of silver, acetic acid, chloride of zinc, dilute solution of perchloride of iron, and similar mild caustics to the superficially scarified parts, we can destroy the dilated vessels, which are often present in great quantity, and thus get rid of one part of the affection.

Emplastrum Mercuriale has seemed to have an exceedingly good effect in the treatment of Lupus erythematosus. We had formerly used Emplastrum mercuriale repeatedly in the treatment of this disease, only, however, in the intervals of treatment by other means, only temporarily, with the view of rendering an already existing scar supple, smooth, and pale. We have only used it as the sole means of treatment in Lupus erythematosus during the last few years. Owing to the remarkable success which attended the use of the Emplastrum mercuriale in a few very obstinate cases, we were led to try it in a number of others. It must be spread thickly, and should be thoroughly adhesive. The linen on which it is spread should not be at all stiff. It is allowed to remain on the lupus patch for twenty-four hours. Before the diseased part is again covered it should be smeared with oil and then well washed with soap, or, better still, with Spir. sapon. kalin. Though the Emplastrum mercuriale cannot be said to be an infallible remedy in all forms and stages of Lupus erythematosus, yet, according to our experience, its use is very often attended by a rapid improvement in this intractable malady, and it may, therefore, be justly recommended in the treatment of Lupus erythematosus.

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* 'Ueber Lupus erythematosus,' Tübingen, 1871. Inaugural Abhandlung, p. 89.

Ointments, oils, Oleum Jecoris Aselli, mild salves, and fats in general cannot be dispensed with in the treatment of Lupus erythematosus. We use them to soften the accumulations of scales, crusts, eschars resulting from cauterisation, and as applications to suppurating and healing wounds, after the use of caustics. They have no specific action on Lupus erythematosus, whether used simply as lard, or with the addition of oxide of zinc, or of lead, or of white precipitate. We employ them only so far as they are of use as emollients, and, therefore, most serviceably in the form of ointments of the simplest character.

CHAPTER LV.

CLASS VIII.—DIV. III.—CONTINUED.

LUPUS VULGARIS.

Fressende Flechte, Dartre rongeante, Esthiomène, Herpes esthiomenos.

We use the terms Lupus vulgaris, Lupus Willani, or Lupus to indicate a non-contagious and non-hereditary disease of the skin and of the adjacent portions of mucous membrane, consisting in the development of tubercles of the size of pins' heads or of millet-seeds, of a brownish-red colour, painless, firm, and apparently situated in the tissue of the skin, which develop with extreme slowness into nodules of the size of lentils or of peas, and larger, confluent infiltrations, then disappear, however, by ulceration or involution, and leave, in their stead, actual scars or cicatricial atrophy of the skin.

History.

There is no doubt that the older physicians did not overlook a disease of the skin of such a remarkable character, of so frequent occurrence, and having such a chronic course and destructive tendency as lupus. But it is equally certain that, until the last century, it was confounded with other destructive, cutaneous processes, chronic ulcers of the leg, ulcerating and serpiginous syphilitic cutaneous affections, carcinoma, lepra, &c., &c.; in fact, with all processes which are attended by loss of substance, spread peripherally, and are difficult to heal. It would be a fruitless task to try to extract a full account of the characteristics of what we now mean by Lupus from the writings of the older authors. It is evident, however, that the chronic, destructive processes attacking the face attracted most attention, and that even the oldest authors thought it worthy of remark that some of these affections were but of slight severity and others were very malignant.

Thus, Celsus[*] says: De Carcinomate. Id vitium fit maxime in superioribus partibus, circa faciem, nares, aures, labia, mammas feminarum . . . . . fereque primum id fit, quod *κακόηθες* a Græcis nominatur: deinde ex eo id carcinoma, quod sine ulcere est; deinde ulcus: ex eo thymium. Tolli nihil nisi cacoethes potest.

The Herpes esthiomenos of Hippocrates,[†] his *ἐξανθήσιες ἑλκώδεες*,[‡] the Herpes ulcerosus of Amatus Lusitanus,[§] the Formica corrosiva and Ambulativa of the translators from the Arabic, the Papula fera of Hafenreffer,[||] Noli me tangere, Tentigo prava, Herpes exedens, phagadenicus, ferus, vorax, depascens, &c., of many authors, may also be considered applicable, in part, to lupus.

The name Lupus itself had already been in use for some time before any distinction was attempted to be drawn between the affection now known under that name and the other similar ones. It is obviously a popular designation adopted by authors, and was originally used figuratively, as is shown by the explanation given by Joh. Manardus[¶]—quasi lupus famelicus proximas sibi carnes exedit.

From the 'Historical Notes on Lupus,' by Virchow,[**] it would appear that this name was used and generally understood as early as the 13th century, being met with in the works of the Schola Salernitana, in Rogerius (1230), Rolandus, and in the Glossulæ quatuor magistrorum. Not only, however, did they and the later writers arrange lupus and cancer (as Rogerius and, much later, Sauvages)[††]

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[*] 'Medicinæ Libri Octo.,' Londini 1837, Lib. v., cap. xxviii., 2, p. 187.

[†] 'Prædictor,' Lib. ii., Ed. Foes. Francof. 1621, p. 98.

[‡] Aphorism., 3, 20, Ed. Jansonnii, Glasguæ 1748.

[§] Curat. med. cent. 2, curat. 37.

[||] 'De cutis affectibus,' Lib. i., cap. 15. Nosodochium in quo cutis eique adhærentium partium affectus omnes, &c. Ulmæ 1660, 8vo.

[¶] Opus Joh. Manardi Ferrariensis physici Mirandulani ad Mart. Millerstadt Ducalem physicum epist. ii., Lib. vii., p. 81-91. Bas. 1500.

[**] Archiv, 32 B., 1 Heft, 1865, p. 139 et sequ.

[††] 'Nosolog. method. Amstelod.,' 1768, i., p. 148. Sauvages alludes to Cancer-Lupus as a form of Cancer.

Wolff and Krebs;* Wolff and Lepra,† and Lupus cancrosus side by side, but also generally associated these with ulcers of the lower extremities. The latter statement applies not only to Manardus,‡ but also to Sennertus,§ and to Lorry,|| at the end of the last century, who says: Lupi (nomadas proserpentes) pustulæ phymatodes s. suppurantes in cruribus et extremitatibus seniorum. The ulcerations about the face, especially, are constantly called Carcinoma, Noli me tangere, Apostema faciei.

Joh. Dolaeus, in a work the first edition of which appeared in the year 1684, and a second in 1703, and was dedicated to King Frederick, was the first, so far as I can find, who said somewhat more definitely that lupus was a destructive process attacking the face. How far, however, it was distinguished from carcinoma by its slighter severity, is only very obscurely indicated. It is there said,¶ naribus est ulcus quoddam maxime corrosivum et serpens, aliis et dicitur noli me tangere, nonnullis Tentigo prava vocatur, quibusdam etiam Lupus, ob horrendam narium depastionem, incipit in quibusdam a male et intempestive curato Polypo, in nonnullis sponte enascitur. Hi affectus ergo secundum majus et minus differunt, quo enim causa pejor eo gravior est malum.

This attempt by Dolaeus to confine the name Lupus to ulcerations about the face, remained without any imitators. For Lorry (in 1776), as has been mentioned before, still included ulcers of the legs under lupus, according to the old custom, and, on the other hand, Plenk retained the old names, Herpes exedens, s. ferus, s. esthiomenos,** for ulcerations about the face.

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* Tollat von Vochenberg, Margarita medicine, &c. Vide Virchow, loc. cit., p. 140.

† Hans v. Gersdorf, Feldbuch der Wundarznei, Strassburg 1526. Citat. Virchow, ibid.

‡ Manardus, loc. cit.

§ Sennert (1611) says: Lupum vero apellant, si in tibiis et cruribus sit, in reliquis vero corporis partibus etsi ejusdem sit pravitatis lupum absolute nominari non censent.

|| 'Tractat. de morb. cutan.' Paris 1777, p. 428.

¶ Joh. Dolaei, 'Encyclopædiæ chirurgicæ rationalis,' Lib. i., p. 182, forming a part of the Opera omnia. Francof. a. M., 1703.

** 'Doctr. de morb. cutaneis,' Viennæ 1783, p. 62, under Herpes s. Serpigo, which is referred to the "Papulæ," it is said: Herpes exedens, s. ferus, s. esthiomenos est herpes qui cutem simul profunde exedit, hinc hic herpes

Willan was the first to apply the term lupus exclusively to certain forms of ulceration about the face, instances of which were selected by Willan, and represented by Bateman in plate lxvii.* of his Atlas.

Bateman includes lupus in the class Tuberculæ, and lays stress on its occurrence on the face, but does not distinguish it from cancer on account of any actual difference in its behaviour and course, but only because he is of opinion that the disease named Lupus is curable by arsenic, whilst carcinoma is not.† The occurrence of lupus "on other parts of the body" is only briefly mentioned. Nevertheless, Willan and Bateman's account had this merit, that it induced physicians to turn their attention to the study of the affection in question.

Since then the name Lupus has been retained by most pathologists, and the clinical idea conveyed by the term has remained unaltered. Alibert alone attempted to return again to the old name of Herpes esthiomenos,‡ after he had previously§ adopted the general designation Dartre rongeante for lupus. In this matter, however, he has found few followers (J. Frank). Most dermatologists in France, England, and Germany have adopted the views respecting lupus advanced by Willan. This has rendered it feasible to amplify in every respect the characteristics of the disease, which were only stated aphoristically by Willan and Bateman. The works of Rayer,|| Biett, Cazenave and Schedel,¶ and Hebra have chiefly contributed to this result.

The great additions which were made by these and other authors to the symptomatology of lupus, resulted in a series of new varieties and subdivisions being created out of the

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vel simpliciter ulcerosus, vel si ulceris labia retordia et dura valde sunt cancrosus est, qualis sæpe in facie observatur.

* 'Delineations of Cutaneous Diseases,' London 1817.

† 'Prakt. Darstellung der Hautkrankh.,' &c., von Bateman, herausg. von Blasius, Leipzig 1841, p. 384.

‡ Alibert, 'Monographie des Dermatoses' (Deutsch von Bloest nach Daynac), Leipzig 1837, ii., p. 91. Alibert mentions: Esthiomenos terebrans, s. perforans and Esthiomenos ambulans, s. serpiginosus.

§ Alibert, 'Description des Maladies de la Peau,' fol., Paris 1814, p. 64, pl. 19, Dartre rongeante idiopathique et syphilitique.

|| 'Traité des Maladies de la Peau,' 1835, ii., p. 193.

¶ Abrégé pratique, &c., Paris 1847, p. 462.

various external modifications of the malady; thus Rayer speaks of Lupus exedens and Lupus non-exedens; Fuchs, of Lupus exedens, cum et sine tuberculis, Lupus excorticans c. et sine tuberculis, L. tumidus, L. exuberans; Cazenave and Schedel, L. qui detruit en surface; L. qui detruit en profondeur, and L. avec hypertrophie; and so, also, from its external appearance, the mode of its spreading, or its supposed cause, arose the names L. exulcerans, exfoliativus, maculosus, tuberculosus, hypertrophicus, rodens, vorax, fungosus, serpiginosus, scrophulosus, syphiliticus, Herpes lupiforme and Lupus psoriasiforme (Devergie*), Lupus sans et avec ulceration (Hardy†), &c.

Hebra, having regard to the fact that all the above-named varieties are neither more nor less than different stages of development of lupus, did not consider them as distinct species, but looked on the affection in all its forms as one disease.‡ To the originality and persevering energy displayed by Hebra in the treatment of skin diseases, must also be attributed, in great part, the advances which have recently been made in the treatment of lupus.

In addition to the clinical characters of the disease having been more fully established, the pathologico-anatomical nature of the affection has been elucidated by a series of authors, whose works we shall refer to in detail under that special heading. All these circumstances, taken together, have resulted in our being able to draw a picture of lupus clinically, which unmistakably separates it from the forms of disease to which it was formerly considered to be related, or with which it was confused.

No confusion in our ideas regarding lupus need be caused by the circumstance that, since 1850, a cutaneous affection, thoroughly distinct from Lupus vulgaris, has been included under the designation of Lupus, after the example of Cazenave, with the title of Lupus erythematosus. It is quite sufficient, when we wish to indicate the form described by Willan, to speak of it as Lupus vulgaris, or simply as Lupus.

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* 'Traité pratique des Maladies de la Peau,' Paris 1854, p. 566.

† 'Leçons sur les Maladies de la Peau,' Paris 1869.

‡ Hebra, 'Atlas der Hautkrankh.,' 1 Lief., Text, p. 4. "From the description of Lupus just given, it follows that it does not form any so-called species of Lupus of Willan, but that the affection shows itself at first by the presence of tubercles or nodes, which subsequently ulcerate, cicatrise, and develop anew at the periphery."

Symptomatology.

The affection of the skin and adjacent mucous membranes known as Lupus vulgaris, or simply as Lupus, varies very much in its external appearance. This great difference in its outward characters is not by any means due to essential peculiarities in the lupoid process, but is the result of a number of influences, such as the age of the patient, the part affected, the mode of grouping, the stage of development, existing complications, &c., which, taken together, determine the *course* of the lupus. For this reason we shall not attempt to frame a concise, schematic description of lupus. If we wish to exhibit or learn to recognise the various natural modifications of the lupoid process, we must follow the latter throughout its whole progress, in the course of which the varieties in its external appearance will reveal themselves in due order.

A fresh eruption of lupus always shows certain cardinal peculiarities, no matter whether it is a first outbreak in the particular individual, or in any particular part of the body, or a recurrence or exacerbation of the process in a portion of skin previously affected. So, also, apart from the special circumstances under which it occurs, the subsequent progress of the lupus obeys certain laws applicable to lupus in general. For this reason we must treat of lupus in reference to—1, its general characters, and, 2, in regard to its special forms determined by the circumstances above mentioned.

1. SYMPTOMATOLOGY OF LUPUS IN GENERAL.

a. *Lupus of the Skin.*

Lupus always becomes developed, first of all, in the form of tubercles, which are discrete, or arranged in groups or circles, are of the size of pins' heads or larger, round, well-defined, and of a yellowish-red or brownish-red colour, and which appear disseminated, buried, or inlaid like mosaic, in the tissue of the skin. Their surface is on a level with that of the surrounding skin, or may be somewhat depressed below it. They are covered by thin, shining epidermis, through which their red colour is visible. They are, therefore, only apparent to the eye, and cannot be detected by the touch. Pressure with the finger causes them to become slightly paler, but not to disappear.*

The individual eruptive spots show many varieties in size, position, and mutual arrangement, even in this early stage of development. They may be so exceedingly small, at first, that they are but just perceptible as red points, shining through the cuticle, and may be mistaken for small telangiectases, or they may be as large as pins' heads, or larger. At one time, the tubercle is imbedded deeply in the cutis, and at another time is situated tolerably superficially at a very early stage. The mutual arrangement of the tubercles varies at the same place and at different times, at one time being irregularly disseminated, at another time collected in dense clusters (aggregated), or arranged in circles. The latter arrangement forms the foundation of the spreading lupus, which we shall describe as Lupus serpiginosus. The tubercles of lupus are almost invariably present in large numbers, but they may vary in number from a few to many hundreds, present at the same time, in the same individual, according as merely limited portions of skin or whole regions of the body are involved in the disease. Even the eruption of the tubercles may be called chronic. Not merely because the individual spots develop slowly, so that many days elapse between the detection of the first signs of their existence and their becoming distinctly recognised, but also because the evolution goes on continuously for weeks, or months, or years, so that the individual tubercles in any group do not make their appearance at the same time. For this reason small and large tubercles are always met with in the same region at the same time.

Lupus is never of congenital origin, though it commonly commences during the first few years of life, as early as the second year, or even, exceptionally, still earlier; it generally begins in childhood. It rarely, or perhaps never appears for the first time after puberty, or at an advanced age. Having once made its appearance, lupus increases more or less steadily for many years, and often for the rest of the patient's life. Apart from slight variations in intensity (the quantity and depth of the eruption), there may be complete interruptions in the outbreak of the disease extending over years or decades of years. Even after such prolonged intervals a renewed outbreak may occur. In old age, as a rule, the severity of the disease becomes diminished.

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* For this reason, the designation Lupus maculosus, adopted by certain authors for this stage of lupus, is not appropriate. The expression maculæ (rubræ) is only applicable to such circumscribed redness of the skin as is produced by vascular injection (Hyperæmia) and vanishes under pressure by the finger. The eruptive spots of lupus, however, do not disappear, as they consist of a foreign material (infiltration of cells) deposited in the tissue of the skin.

The eruption at first attacks a circumscribed portion of the skin, and may remain as a local affection throughout life, since fresh outbreaks only occur on the part originally attacked; or it may spread peripherally from the part first affected, and, in course of time, may occupy large tracts; or, lastly, the disease may, from the first, or in the course of years, make its appearance on different regions of the body at the same time, and may then spread from these various centres to the surrounding parts. In the latter case it almost assumes the character of a universal eruption.

In addition to the variations discernible even in the developmental stage noticed above, which concern the number, size, and mutual arrangement of the tubercles, and the affection of one, or several, or many tracts of skin, &c., &c., lupus assumes more decided and striking forms in its further course. These variations do not depend on any essential differences in the fundamental process, but on secondary causes, such as differences in the mode of diffusion, of progress, of evolution and involution, anatomical arrangement, part of the body affected, and secondary and complicating symptoms of disease.

The individual tubercles, which are at first imbedded in the tissue of the corium, and whose red surfaces shine through the cuticle covering them, increase in size in every direction, until they are as large as small shot, lentils, or peas, or larger. In this way they gradually approach the surface, and finally become prominent, and have a glistening appearance, owing to their pushing the epidermis before them, and stretching it. They may, at this time, be recognised, by palpation, as firmly elastic nodules. They are not painful, either spontaneously or on pressure. As these enlarged and prominent nodules steadily increase in size and numbers, they here and there become more closely approximated to one another. Ultimately they become fused into nodules of the size of peas or hazel-nuts, or larger, elevated a line above the surface, yellowish-red or redder still in colour, firmly elastic, or somewhat softer in the centre, and semi-transparent.

Their surface appears irregular or plane, smooth, glistening, traversed by a few dilated vessels, and covered by glistening or whitish, desquamating epidermis—Lupus prominens, tuberosus, tuberculosus, nodosus.

Or, the tubercles may unite to form larger, firm, irregularly shaped, flat or tuberous, globular, red or pale, semi-transparent infiltrations, and tumour-like indurations of the skin—Lupus tumidus. Having arrived at a certain stage of their development, the lupus tubercles, isolated, or, as described, fused together into larger nodules and tubers, remain without any perceptible change occurring in them for a long time—for weeks. They may then undergo involution in a twofold manner.

1st. The tubercle which is undergoing involution becomes flaccid, wrinkled, and less prominent (uniformly). The epidermis over it, which was previously tightly stretched, at the same time wrinkles and desquamates, crumbling into thin, dry laminæ—scales. These are, at first, white, but subsequently become of a dirty, yellowish-brown colour, owing to fissuring of the epidermis, or to the tubercle having been wounded or scratched, and a certain amount of sero-sanguinolent fluid becoming effused and mixed with the scales and drying up into crusts. On the larger nodules the same change occurs, and, occasionally, at various points corresponding to the separate spots of lupus constituting the nodules. Or, the shrinking and desquamation may affect the centre of the nodule, whilst its peripheral portion still presents the glistening, tense, firm aspect and sensation of a lupus tubercle at an early stage. After some weeks, or months, the tubercle, or the corresponding part of a larger nodule, owing to the continual desquamation from its surface, becomes depressed below the surface of the skin, and finally disappears, in consequence of the continual loss of its substance which occurs. The remainder of the scales fall off, and we then find the patch of skin deeply or superficially depressed, according to the size and situation of the tubercle, atrophied, and glistening like a scar. The process described constitutes Lupus exfoliativus.

2nd. The lupus becomes softened and disintegrated from its surface downwards, or converted over its whole extent into a crumbly, cheesy, purulent mass. The pus dries up, and forms with the remains of the epidermis variously coloured crusts of moderate thickness. After they have been thrown off, or removed, there remains a superficial or deep, suppurating cavity —an ulcer. In this condition, lupus is known as Lupus exulcerans.

The lupoid ulcerations vary exceedingly in their character, according to the duration and depth of the lupoid infiltration; and according as it occurs on a previously intact, cicatricial, or inflamed base. Most frequently, the lupoid ulcerations consist of rounded or irregularly shaped losses of substance, which are flat or slightly concave, and their margins are well-defined, soft, and not at all elevated. The surface, when the purulent secretion has been cleaned away from it, is red, smooth and glistening, and bleeds easily.

At another time, the margins and the base of the ulcer are covered with red, granular, papillary elevations (granulations), and fissured by superficial, or deep, suppurating furrows and pits. The granulations are occasionally much raised, papillomatous (Frambœsioid—Lupus hypertrophicus—exuberans), firm, unaffected by friction with charpie, and are but slightly sensitive. Or they are soft and friable, bleed easily, and are destroyed by the slightest pressure, &c. Sometimes the base of the ulcer (the skin) is movable over the subjacent tissue; at other times, it is firmly united to the subjacent fascia, cartilage, ligaments, or periosteum. So, also, the margins are sometimes firm, callous, and everted; or, on the contrary, formed of bluish-red, thinned skin, which is undermined for some distance all round. The ulceration not only destroys the lupus tubercles themselves, but also the greater part of the skin involved. Ultimately, at the end of weeks, or months, healing commences. Healthy granulations spring up from the base and margins. A border of epidermis advances from the margin, and, also, from the islands of skin which remain unaffected in, or between, the ulcerated parts, and covers over the granulations which have reached the level of the surrounding skin, and the process of healing is complete.

The two forms of involution of lupus (exfoliation and exulceration) do not exclude one another. On the contrary, they are associated together, not only now and then in the destruction of the same lupus tubercle, but, also, either at the same time, or alternately, at different parts of the same patch of lupus.

Whilst these changes are taking place, the outbreak of fresh tubercles does not by any means cease. Fresh eruptive spots constantly become developed. For this reason, the disease seems perpetually changing its appearance. We see in the same region, at the same time, lupus tubercles in various stages of evolution and involution, young, small and large nodular forms, some undergoing exfoliation, others ulceration; here, covered with scales, there with crusts; here an open ulcer, with this or that condition of surface, smooth or covered with papillary, fissured, easily bleeding outgrowths, or just becoming skinned over. Amongst these, showing that involution is going on, are cicatricially atrophied spots, scars, and also islands of skin hitherto unaffected. On the other hand, owing to the continuous or regularly remittent outbreak of fresh nodules, the patch of lupus increases in size. The fresh spots may either appear without any regular arrangement, within the area already affected, as well as in the neighbourhood, on portions of skin hitherto unaffected, and even on parts which have already undergone cicatrisation. Or, the fresh spots develop close to the outer margin of the old lupus nodules, and generally in a circular form. Whilst the central ones are undergoing involution, exfoliating or ulcerating and scarring over, the peripheral ones have attained the acme of their development. They then begin to undergo involution, whilst a fresh circle or segment of a circle of nodules, which are at first isolated, and subsequently fused together, becomes developed at their extreme periphery. The margins of two or of several circular patches of lupus, quite distinct from one another, soon come in contact, because the circles become enlarged by each fresh peripheral outbreak. They soon coalesce so as to form gyrate patches, owing to the disappearance of the adjacent margins. When lupus spreads in this way, we designate it Lupus serpiginosus.

This is the form of lupus which becomes distributed most rapidly and certainly over large tracts of skin, and the more so because, at the same time, the repeated outbreaks first mentioned do not cease to occur, but, on the contrary, spots of lupus become scattered over the healthy and cicatricial tracts of skin, bounded by the curved lines. Though Lupus serpiginosus does not differ, essentially, in the slightest degree, from the disseminated form, yet, as regards their mode of spreading, we may consider the former the severer, and the latter the milder affection. In disseminated lupus, a patch, the size of a half-crown, may scarcely have increased in circumference at the end of fifteen years, notwithstanding that new outbreaks may constantly have occurred within its area. A patch of Lupus serpiginosus, however, would, undoubtedly, have attained a much larger size during the time, because each fresh outbreak adds to its circumference.

b. *Lupus of the Mucous Membrane.*

On the mucous membrane, lupus neither becomes evident at so early a stage, nor has such characteristic eruptive spots, nor does it spread in such a remarkable manner as when it occurs on the skin.

The spots are not recognisable until they have occupied small or large tracts of reddened, inflamed mucous membrane, in the form of prominences closely crowded together, of the size of pins' heads or of millet-seeds, of a brownish-red colour, and covered here and there with silvery-grey, desquamating epithelium, or excoriated, easily bleeding, and firm to the touch. They coalesce, in course of time, so as to form large plaques with an irregular surface, the epithelium covering which becomes of a dull grey colour, opaque, and thickened, and then peels off, leaving superficial or deep, painful fissures, or sometimes an ulcer with a red, finely granular, surface. When they have existed for some time, the plaques and tubercles subside, and silvery-grey, glistening, contractile scars remain, in the form of streaks or larger patches. Or the patch also becomes united with the subjacent tissue and depressed. Or, lastly, secondary, inflammatory infiltration of the submucous tissue, suppuration, the formation of abscesses, ulceration of the mucous membrane to a variable extent and in various forms, cicatrisation, and all its consequences, result.

The original starting-point of lupus, therefore, is the tissue of the skin or of the mucous membrane. Beginning at one time superficially, at another, more deeply, the nodules grow towards the surface of the skin and also increase in diameter, remaining isolated or becoming fused into large masses.

The lupoid infiltration may, however, extend towards the deeper structures as well as spread superficially. Thus, it may penetrate into the subcutaneous cellular tissue, the substance of cartilage covered only by skin (alæ nasi, external ear, &c.), tendinous structures (of the joints, sheaths of tendons, &c.), but whether it may reach beyond the fascia to the muscular layers or the bones we are not in a position to state. In this way, therefore, the disease may acquire remarkably complex external characters. Whilst the infiltration of the subcutaneous tissue and of the cartilage forms a tuberous, firmly elastic, semi-transparent tumour, isolated tubercles may be disseminated at the same time in the skin enveloping the latter. These subcutaneous and submucous, lupoid infiltrations rarely disintegrate and become absorbed. They more frequently soften and ulcerate.

The symptoms which have been described as belonging to the course of lupus *per se* do not invariably entirely represent the aspect of the disease as it comes under observation. In addition must be enumerated various sequelæ, which are the direct results of the lupoid process, such, for instance, as cicatricial atrophy of the skin, causing this to appear thin, tense, glistening, covered with thin, parchment-like epidermis, and of a bluish red, or white colour; thick, prominent scars, resulting from the previous ulcerative destruction of the skin; analogous changes in the mucous membrane, and contraction of both with secondary distortion of the tissues, contraction and absorption of the cartilages, &c., &c. Moreover, the external appearance, the course, and the whole significance of lupus may be modified essentially by a complete series of complex processes which are only indirectly connected to the lupoid affection. The relation which exists between these sequelæ and secondary complications and lupus is essentially due to the local anatomical conditions, that is, to the seat of the lupus. They can, therefore, properly only be considered in conjunction with the latter.

Parts attacked by Lupus.—Cutaneous lupus may be met with on any region of the body; on certain parts much more frequently than elsewhere; on other parts, very rarely, and, on others again, never primarily, but only as an extension from an adjacent patch of lupus.

Lupus occurs most frequently on the face, chiefly on the cheeks and on the cutaneous portion of the nose, the alæ nasi, and the tip of the nose; rarely on the forehead, but rather more commonly on the ears. We have seldom seen lupus attack the hairy scalp primarily, though we have frequently observed it spread from a patch on the forehead or on the neck. The front and back of the neck and the clavicular region are generally affected by extension from patches on the face. It is met with on the trunk (more frequently on the back than on the mammary region and abdomen), both in the disseminated and serpiginous forms, more frequently the latter. Not unfrequently there is an isolated patch of disseminate or serpiginous lupus on the nates. We have only once seen lupus on the penis and prepuce, and then it had spread from the inner surface of the thigh. When lupus occurs on the external female genitals, it has invariably spread from the inner surface of the thigh. Next to the face, the extremities are most frequently affected with lupus. Sometimes it predominates on the extensor surfaces. It mostly occurs in the serpiginous form. The palms of the hands and the soles of the feet are rarely affected, and generally the lupus has spread from the back of the hand or the dorsum of the foot.

Lupus of the face and ears is generally of the disseminate form; that of the neck and of the extremities distinctly serpiginous; and, on the trunk, the two forms are associated. The serpiginous form, however, as has been stated, never occurs quite alone.

Lupus may also be met with spread almost universally over the body; in this case, however, either the face and extremities, or the face and back, will be predominantly affected. The mucous membrane most frequently affected is that covering the alæ and septum nasi; the mucous membrane of the cheek, gums, hard palate, tongue, soft palate, posterior wall of the pharynx, epiglottis, larynx, or true and false vocal cords, and the conjunctiva are rarely attacked. In conjunction with the latter the cornea is usually involved.

2. SYMPTOMATOLOGY OF LUPUS IN PARTICULAR SITUATIONS.

The special modifications which lupus undergoes owing to the complications and secondary influences just described, constitute the "special symptomatology" of lupus. They occur repeatedly in a moderately characteristic manner, for the most part, on special regions of the body, and may, therefore, be best described in connexion with these.

Lupus of the Cheeks.

Lupus is met with on the cheek (on one or both sides) more commonly than on any other part, and almost invariably in the disseminate form. Its course varies. Often the disease may be confined to a patch the size of a half-crown, or of the palm of the hand, for 15–20 years or more. Eruptive spots develop and undergo involution by exfoliation, leaving thin scars behind, whilst fresh tubercles appear over the same area; occasionally the tubercles may be fused into a single prominent tumour. The skin on the parts where a spontaneous cure has resulted appears white, glistening like a scar, slightly thinned, and bald (hairless). The disease may remain quiescent for months and years, and may then break out anew, fresh tubercles becoming developed. It is only at a very advanced age that the process may be expected to become completely checked. From the cheeks, the lupus frequently spreads in a serpiginous form downwards over the maxillary and cervical regions to the clavicular region, upwards over the temples to the forehead and the hairy scalp, forwards to the nose and the integument of the eyelids, the conjunctiva, the red border of the lip, and from thence to the mucous membrane of the lips and cheeks. In this way the lupus may ultimately occupy the whole of the skin of the face. The parts which remain unaffected until the last, as a rule, are the upper eyelids and the middle line of the forehead.

Adenitis, inflammatory swelling, and chronic enlargement of the parotid, of the glands in the submaxillary region, and of certain small glands situated in front of the ear, not unfrequently occur in the course of lupus of the cheek. These affections may subside, or fluctuation, thinning of the skin, and bursting of the abscess, follow. On pressure there exudes not only a whey-like pus, but also a cheesy, friable mass. Owing to a succession of these glandular abscesses and their indolent, extremely chronic course, repeated opportunities are afforded for the formation of sinuses discharging pus, undermining of the skin, and, later on, for the production of tumefied, hard, prominent scars, causing various deformities.

Erysipelas but rarely occurs spontaneously in the course of lupus; frequently, however, as a result of the application of caustics for its cure. After the erysipelas has subsided, the greater portion of the lupus, the more recent tubercles, at any rate, will have disappeared. When papillary outgrowths occur, they are, for the most part, confined to circumscribed portions, as large as a half-crown or the palm of the hand, on the cheek or prominence of the chin, where a patch of Lupus exulcerans exists. The outgrowths spring from the base of the ulcer, and are met with, for the most part, when no appropriate local treatment has been adopted for a long time. In such cases, the affected part projects beyond the level of the surrounding skin, and is covered with thick, discoloured crusts. After the latter have been removed, a red, granular, elevated surface with many fissures is exposed, or a tumour, one or several lines in height, seated on a common, infiltrated base, red, easily bleeding, slightly painful, and resembling a mass of papillæ or pointed warts in appearance. From it there exudes a thin pus, which quickly dries up into a crust when exposed to the air for a time. Now and then, a warty, papillary structure, which, by its appearance and course, soon betrays a malignant character, and is recognised as an epithelial carcinomatous growth, becomes developed from these papillary, gland-like excrescences, together with an alteration occurring in their microscopic structure. In the midst of a part of the skin of the cheek, which has been the seat of lupus for many years, is traversed by flat and thick scars, covered with lupus tubercles in various stages of development and involution, and variously arranged, and is occasionally bounded by a series of nodules arranged in a serpiginous manner, the tumour rises up from its broad, often neck-like, constricted base as a rounded, red, fungous hemispherical mass, gland-like and fissured on the surface, of the size of a walnut, of a child's fist, or larger, whilst a prolongation from its hard basis (separated from the surrounding skin as if by a knife) penetrates deeply beneath the level of the surrounding normal skin into the subjacent tissue. The tumour is firm to the touch, has a glistening aspect, and secretes a copious, offensive ichor. It grows rapidly towards the surface, and deeply towards and through the mucous membrane of the cheek, and occasionally, at the circumference, involves the adjacent skin in the papillary outgrowth. In the latter case, broad, everted, indurated margins are formed with tuberculated surfaces, glistening like mother-of-pearl. The destruction of tissue associated with the progressive growth of the tumour is identical with that attending an idiopathic epithelial carcinoma, and for an account of its further progress we must refer to the chapter devoted to it. The patient's general condition becomes considerably deteriorated during the development and further course of the growth. Fever, sleeplessness, emaciation, symptoms of cachexia, acute affections of internal organs usher in a fatal termination, unless appropriate treatment has been adopted in good time. The complication of carcinoma with lupus has already been observed repeatedly by Rayer,[*] Devergie,[†] Bardeleben,[‡] O. Weber,[§] Hebra[||], myself, and Volkmann.[¶] A case observed and recorded by Hebra (which I also saw), and a case recorded by Volkmann, are the only ones in which a cure resulted; in all the others noted by these, or previous authors, death ensued.[**]

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[*] 'Traité des Maladies de la Peau,' Paris 1835, ii. B., p. 198.

[†] 'Traité pratique des Maladies de la Peau,' Paris 1857, p. 644.

[‡] 'Lehrbuch der Chirurgie,' Berlin 1858, 3 Lief, p. 44.

[§] O. Weber, in 'Lehrb. der Chirurgie von Pitha-Billroth,' ii. B., 2 Abth., 1 Lfg., Erlangen 1865; and his 'Chirurg. Erfahrungen,' Berlin 1859, p. 294.

[||] 'Wiener med Wochenschrift,' 1867, No. 3 mit., 2 Holzschnitten.

[¶] 'Sammlung klinischer Vorträge,' No. 13, 1870. 'Ueber den Lupus und seine Behandlung,' p. 64.

[**] There is a man, aged 27, in Hebra's ward, who has been under treatment from time to time during the last ten years for lupus of the right cheek. He now has a fungating carcinomatous growth on the right cheek, whilst the right side of the neck and the right arm are still covered by lupus. [A case in which an epithelioma grew in the *scar* of a lupus patch on the upper lip came under the care of Mr. Hutchinson, in October 1873. The patient was a woman, aged 51. There were several undoubted patches

Lupus of the Nose.

Lupus may attack the skin of the nose alone, or in conjunction with lupus of the cheek. In the latter case, it is obvious that, just as occurs when Lupus erythematosus is similarly situated, the patches may resemble a butterfly in shape. It is especially important to bear this in mind, in order to avoid being misled by the shape of the patches into making a wrong diagnosis. The skin over the alæ nasi is the part of the integument of the nose most frequently affected, in the first instance. It is only by its further extension that lupus involves the bridge, the sides, and the root of the nose. From the latter situation it spreads to the glabella, and even over the forehead and margin of the hairy scalp, in a serpiginous or disseminate form; from the lateral surfaces of the nose it spreads over the adjacent portions of the cheeks to the inner canthi, to the lower eyelids, &c., &c.

As a rule, lupus of the alæ nasi and of the tip of the nose occurs in the disseminate form, the eruptive spots being red, and deeply imbedded, or developing into prominent tubercles. These coalesce, here and there, forming large, red, irregular protuberances, whilst, owing to the close aggregation of the flat nodules, flat infiltrations of an irregular shape and uniformly red colour are produced. The tubercles exfoliate in course of time, waste away, and cicatricial degenerations of the skin remain behind.

These symptoms, taken together, constitute the ordinary characteristics of lupus of the nose; bluish-red, and white, glistening, cicatricial spots and streaks, flat and prominent, isolated and confluent tubercles, and nodes, and infiltrations, with a smooth surface or desquamating, are mixed together, without any regular arrangement.

The cicatricial atrophy of the skin causes, eventually, a thinning and retraction of the alæ nasi. The cicatrised, shining, anterior cutaneous portion of the nose, with a few tubercles

of lupus and other scars on the nose, cheeks, &c. The growth was excised, and rapid and complete recovery followed. The patient returned in February 1874, however, with fresh carcinomatous growth and ulceration, which had attacked a neighbouring scar. Chloride of zinc is now being applied.]—Tr.

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scattered over it, here and there, appears too small, retracted, as if cut away at the sides and tip at the same time, as if "worn away," and its walls are thin, dry, and rigid. The nose has the appearance of one constructed of papier-maché. The atrophy which occurs over the bony part of the nose is less important.

Lupus exulcerans of the nose presents certain peculiar characteristics, which are observed the more frequently in the same form, inasmuch as the mere omission of appropriate treatment is sufficient to lead to their production. The nose, that is, its anterior portion, is so thickened that it appears twice its natural size, and enveloped in a dirty, brownish-green, dry crust. The patients and their friends are, as a rule, firmly persuaded that the nose itself is enlarged. If, however, we press the tip of the finger quickly and repeatedly into the crust, it will be found that this is remarkably easily indented, and quickly resumes its former shape, in fact, there cannot be any doubt that it does not cover a firm body, but a soft, elastic mass. If the crust is removed, a red surface is exposed, which is covered with a quantity of pus, fissured, beset with papillary excrescences suffused with blood, and which mostly occupies the whole of the dorsum of the anterior cutaneous part of the nose up to the tip, but, occasionally, also extends over the alæ nasi and their anterior margins. Nevertheless, the nose invariably appears abnormally large, owing to the considerable prominence of the fungous excrescences. If, however, we examine with the finger, we can easily convince ourselves of the thin (in places) and remarkably yielding condition of the cartilaginous portion of the nose. If we pass a probe deeply between the outgrowths, it will frequently enter the cavity of the nose. If a stick of nitrate of silver be used, the soft mass of the outgrowths breaks down into a bloody, pultaceous substance; the stick here and there encounters a resisting substratum, mostly on the cartilages, but penetrates, without any special force being used, into the cavity of the nose. Essentially, therefore, these changes consist in ulceration, which has penetrated more or less deeply, and complete destruction of all the layers of the anterior cutaneous portion of the nose in places, the whole surface of the ulcer being covered by luxuriant granulations, which have sprung up from its margins and base, and are themselves undergoing suppurative degeneration. After these granulations have been destroyed, as is necessary in the course of treatment, it becomes evident that the nose is not merely not enlarged, but is even diminished in size, and its alæ are frequently perforated. This result will not surprise the practical physician, who has been prepared for it by the morbid appearances given above. The patient and his friends are, however, completely undeceived, for they will have had no conception of the destruction going on beneath the scab.

The circumstances mentioned must be thoroughly borne in mind in relation to the question of prognosis.

Lupus of the mucous membrane of the alæ and septum nasi, as a rule, only occurs in association with lupus of the skin on the outside of the nose; not infrequently, however, it is developed independently.

The disease is recognised, first of all, by the formation of scabs on the mucous membrane of the parts mentioned. The crusts cause the alæ nasi to be rigid and painful, they often crack, become thickened by the concretion of the blood and serum, which ooze from the fissures, and may, for a time, block up the anterior nares, owing to their bulk. After their removal by force, or by the aid of emollient remedies, irregularly margined, excoriated surfaces are exposed, which resemble in appearance the excoriations met with in eczema or sycosis. Pustules also are often formed, and, as in the case of the affection just mentioned, involve the follicles of the vibrissæ, and may be perforated by hairs. The excoriations may be covered over for a time with epithelium, whilst others form elsewhere. In this way the process may last for years. The intervening firm, dry, whitish, glistening condition of the mucous membrane shows that this is undergoing cicatricial atrophy. If the disease develops more rapidly, and especially if treatment be discontinued, the mucous membrane in places becomes softened and friable, and melts away into ulcers, which penetrate deeply, down to the cartilage of the septum or of the ala nasi, and their surfaces are frequently covered with papillary granulations, which are undergoing destruction. At these parts perforations occur, which may be discovered with a probe or a stick of nitrate of silver long before they have become large enough to be recognised by the eye.

The destruction of the cartilage from within keeps pace with that described as going on from without, and in the same manner a portion or the whole of the cartilage of the septum is destroyed. The perforation in the latter is not infrequently concealed during the height of the process by the luxuriant fungating granulations springing from the margins of the ulcer. Fortunately the septum cutaneum is less frequently destroyed by lupus than by syphilis. The nose, therefore, when it can be saved, has a tolerably good appearance from the front, even though the cutaneous covering of the nose, owing to loss or atrophy of the cartilages composing it, and the cartilage of the septum, becomes depressed somewhat in the form of a saddle.

Lupus of the Ear.

When lupus attacks the outer and inner surfaces of the concha, extending for a short distance along the external meatus, it generally does so in conjunction with lupus of the adjacent skin, of the cheeks and temples, and the mastoid region. Under these circumstances, the disease does not differ, as a rule, in its nature and course from that of other parts. Sometimes hard, papillary excrescences, covered with dry, thick, fissured epidermis, become developed on the margin of the concha, and form a sort of edging to the latter for some distance. These lupus tubercles are generally disseminated over the lobule as well as the other portions of the external ear. Now and then, however, in the course of years, the lobule becomes converted into a nodular mass of the size of a large fig. The tumour feels like firm dough, the skin over it has distinct tubercles of lupus disseminated through it, appears excoriated in places, covered with crusts, eczematous, weeping, and here and there is beset with papillary excrescences, which may be dry or suppurating.* The lupus may also attack the lining membrane of the external meatus, and spread close to the membrana tympani. In these cases the hyperæmia and inflammation soon attack the membrane. Otitis media and perforation of the membrana tympani may result, and after all sorts of disturbances of hearing, such as tinnitus, pains in the ears, and partial deafness have existed from the outset with varying intensity, complete deafness ensues. Lupus exuberans, also, may develop now and then at one or other part of the concha, in the form of frambœsia-like excrescences, growing from ulcerating tubercles of lupus. In one case, in which there were patches of lupus on the trunk, on the right ear, and on the left cheek, we saw a conglomerate, red, suppurating growth, which was about half an inch in height, and bled easily, occupying the situation of the left ear, and reaching in a continuous patch from the mastoid region, over the ear, and on to the cheek. No trace whatever could be discovered of the concha, or of the external meatus. After complete removal of the mass, a thin, parchment-like, transparent, cicatricial membrane was exposed, stretching from the cheek to the mastoid process behind, to the temple above, and to the submaxillary region below, and pressing the shrivelled cartilage of the ear flat against the skull. The contracted external meatus also came into view after the granulations which sprang from its walls and obstructed it were destroyed by caustics or separated by sponge-tents.

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* See the account of such a case (in a female 63 years of age), in which a galvano-caustic loop was used successfully, in the 'Ærztlicher Bericht des k. k. allgemeinen Krankenhauses, Abtheilung für Hautkranke, aus dem Jahre,' 1866, p. 174.

Apart from these exceptionally severe cases and the annoyance caused by the enlargement of the lobule last mentioned,* lupus of the external ear is not usually attended by any further ill consequences than those caused by the scars which result; atrophy of the concha, closer adhesion or extreme attenuation of the lobule, complete union between the posterior surface of the concha and the skin of the tempero-mastoid region, and retraction of the concha. It is rare for any considerable contraction of the external meatus to occur, and it is equally rare for the internal ear to become severely involved.

Lupus of the Eye.

By extension from the neighbourhood of the cheek or nose, and after cicatricial contraction of the skin of the cheek has produced complete ectropion of the lower eyelid, lupus may also involve the conjunctiva palpebræ, the conjunctiva bulbi, and the cornea. The conjunctiva appears of a dark, reddish-brown colour, and is beset with dry, coarsely granular eminences communicating a firm sensation to the touch. It is in a trachomatous condition; later it becomes smooth, glistening, and atrophied in places. A grey, irregularly elevated, firm membranous deposit spreads, like a pannus, from the conjunctiva, which has undergone this degeneration, over the cornea, and in time completely covers it. The membrane, in this case, forms a tolerably complete mechanical impediment to vision.

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* The lobule, when enlarged even to a slight extent, may be gradually cut through by the earring.

Under certain circumstances, this condition admits of cure (see further on, under the head of Treatment of Lupus).

Lupus of the Mouth and Fauces.

Lupus is only met with on the mucous membrane of the mouth and fauces in association with cutaneous lupus, either as a direct continuation from the skin of the cheeks and lips, or independently. On the red margin of the lip we may distinctly recognise isolated tubercles of lupus. On the mucous membrane of the lip, on the contrary, the disease appears in the form of bluish-white, firm deposits, rough and finely-granular to the touch, and arranged in streaks and plaques, which are continually undergoing desquamation and regeneration. The mucous membrane, where the excoriations are, is swollen, reddened, finely granular, and bleeds easily. At parts where the disease is of older date, the mucous membrane is thin, of a pale red or glistening-white colour, cicatricial appearance, and tightly stretched. The labial glands are often also swollen, and may be felt as elevated, conical, firm tubercles. Both lips are often remarkably tumefied, the lower lip appears everted, dependent, and thickened, and when pinched between the fingers feels firm and doughy. The lupus of the skin and of the mucous membrane of the lip have an equal share in the production of this swelling of the lip. Firm or soft, and easily injured, frambœsioid excrescences, from half a line to a line and a half in height, and densely crowded together, become developed, now and then, on excoriated or superficially ulcerated parts of the mucous membrane of the lips, more frequently on that of the hard palate, on the part immediately behind the upper incisor teeth, and on the inner surfaces of the cheeks. Sponginess and scorbutic degeneration of the gums, which bleed easily, are painful, and separate from the necks of the teeth, greyish opacity of the epithelium of the tongue, which is indented by the teeth, in short, more or less well marked symptoms of stomatitis are almost invariably met with in connexion with lupus of the buccal mucous membrane. Lupus of the parts just mentioned is followed by a moderate degree of atrophy. I do not ever recollect to have seen secondary inflammation of the submucous tissue ending in caries or necrosis of the bones of the hard palate, and perforation extending through into the cavity of the nose, nor necrosis of the vomer in consequence of lupus of the mucous membrane of the nose; nor am I aware of any such case having been recorded.

On the soft palate, lupus may be met with either as a continuation of a similar affection of the mucous membrane of the hard palate, or independently. The velum palati, the mucous membrane of the pillars of the fauces, uvula, &c., are uniformly or partially reddened, œdematous, and glistening. The symptoms are those of a chronic angina. The affection lasts for many years, and, during its course, more characteristic changes become apparent. Amongst these may be mentioned a finely granular, excoriated aspect, limited to certain parts of the mucous membrane; the appearance of more elevated, papillary outgrowths; the formation of ulcers (losses of substance) which are of the size of lentils, fourpenny pieces, or larger, of an irregular shape, and shallow, have a smooth, red, glistening, or coarsely granular, irregular, or rather sloughy-looking, fissured surface, and sharply cut, not undermined, reddened, and moderately swollen borders, and destroy the structure of the velum and of the pillars of the fauces very slowly; and, lastly, the formation of scars and their consequences.

In the course of years the lupus may entirely die out from the tracts of mucous membrane in question. There may remain either slight or very severe alterations. The uvula is either simply atrophied and constricted at its base, or appears as a small warty appendage to the margin of the palate, or it is wholly destroyed by the ulceration, and the place of its attachment can only be recognised as a cicatricial retraction of the velum. The anterior pillars of the fauces are covered with cicatricial, glistening streaks, and are distorted, and the posterior are united to the posterior wall of the pharynx. In these respects the secondary changes completely resemble those of syphilis. The free margin of the velum, however, is much less frequently united to the posterior wall of the pharynx. On the other hand, we meet with large cicatrised defects in the velum, caused by marginal ulceration, and which, owing to subsequent shrinking of the remains of the velum, appear more considerable than they really are. I have never met with punched-out ulcerations or perforations cicatrised over at the margins, and, therefore, permanent, situated in the median line of the velum somewhat above the base of the uvula, and associated with preservation of the latter, and of the free margin of the velum, as the result of lupus.

Lupus of the Larynx.

Lupus attacks the mucous membrane of the larynx (of the epiglottis, of the interior of the larynx, and of the true vocal cords) just as it does that of other parts. The disease either spreads directly from the palate to the epiglottis, or it originates independently. It is only met with, however, in association with cutaneous lupus, which may precede it, or be present at the same time.

The affection betrays itself in an early stage and during its course, extending over years, by hoarseness of varying intensity, which may increase to persistent or intermittent aphonia.

Great numbers of small, papular, reddish eruptive spots often cover the upper and lower surfaces, and the free margin of the epiglottis. Now and then there is a dull grey epithelial layer on these, and, where this has been removed, here and there, red excoriated points and patches remain. The abrasions gradually deepen in course of time, so as to form superficial, irregularly shaped, slit-like ulcers. Such are found on the upper surface of the epiglottis,* or spread inwards from the margin, and then generally form a large, triangular ulcer (loss of substance) penetrating deeply into the substance of the epiglottis, and having the apex directed forwards.† Precisely similar alterations to these papular elevations changing into small or large ulcers, occur here and there on the mucous membrane of the boundary and interior of the larynx.

Lupus attacking any of these parts is accompanied by symptoms varying in intensity, of diffused or circumscribed catarrhal inflammation, swelling, granulation, and thickening of the mucous membrane. In certain parts, most frequently on the anterior surface of the epiglottis, the mucous membrane appears to project in thick rolls, or to be covered with papillary, greyish-red excrescences.* The loss of substance caused by the ulceration, and the cicatricial contraction which results from the processes described, lead, according to their intensity and localisation, to transitory or permanent functional disturbances of deglutition, respiration, and phonation.

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* 'Atlas zur Klinik der Kehlkopfkrankheiten von Prof. Ludwig Türck,' Wien, 1866, Taf. xx., fig. 6.

† Ibid., Taf. xxi., fig. 1.

I have never seen any symptoms threatening a fatal termination, œdema of the glottis, perichondritis and chondritis laryngea, or necrosis of the cartilages result from lupus, and I have not been able to hear of any cases from laryngoscopists with whom I have conversed on the subject.

Lupus of the Extremities.

The extremities are frequently attacked by lupus. Now and then the disease is confined to these; it may also occur at the same time on the cheeks, nates, or trunk; the extremities may be affected in all possible combinations, one upper or one lower extremity alone, an upper and lower, either of the same or of the opposite side, at the same time, both upper or both lower extremities alone, or, lastly, all four extremities at the same time. On the upper extremity the eruption, as a rule, becomes developed most abundantly from the elbow downwards, over the forearm, both extensor and flexor surfaces, and from thence over the back of the hand and the flexor surface of the wrist, into the palm of the hand, and over the palmar surface of the fingers to their tips. The upper arm is not, however, by any means unaffected, but is, on the contrary, occasionally thickly covered with lupus.

In the same way, on the lower extremity, the greatest number of tubercles occur from the knee downwards, on the leg and dorsum of the foot, extending from the borders of the latter to the sole of the foot and to the tips of the toes.

Lupus of the extremities generally takes the serpiginous form, but is associated also, as in other parts, with an abundance of disseminated spots. Neither in its form, nor manner of spreading, nor, as a rule, in the changes which it causes *per se* in the tissue of the skin, does lupus of the extremities differ in any way from the same affection of other parts, of the cheeks, for instance. Exfoliation, ulceration, tuberous formations, cicatricial atrophy and the formation of deep scars, perpetual renewals, evolution and involution go on, with great variations, and yet, on the whole, with a chronic course, as in lupus of other parts of the body.

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* Rokitansky, 'Pathol. Anatomie,' 3 Band, p. 25. Türck, 'Klinik der Krankheiten des Kehlkopfes,' &c. Wien 1866, p. 426.

On the other hand, the secondary inflammatory affections, previously mentioned, of the subcutaneous tissues, of the subcutaneous cellular tissue, of the periosteum, and of the bones, occur so regularly and in such a well-marked form that their almost invariable development influences the symptoms of the disease remarkably, and gives a peculiar character to it.

During the first few years of its existence, that is, until the patient's tenth or twelfth year, the lupus has the same characters as on other parts of the body. Before long, the cicatricial atrophy and formation of scars which, as the disease advances, steadily involve large tracts of skin, manifestly hinder the free movements of the joints. The elbows, the knees, and the phalangeal joints remain semi-flexed, as the contracted, cicatrised skin cannot be stretched sufficiently to allow of extension (pseudo-anchylosis).

Erysipelas, in the form of a diffuse dermatitis or of a streaky, inflammatory redness and lymphangitis, attended by its well-known constitutional symptoms, makes its appearance from time to time, commencing on parts abundantly beset with tubercles of lupus, or on parts where ulceration is going on, or which have been irritated by the local treatment adopted. Abscesses not unfrequently form in the course of the erysipelatous inflammation. We find two or three, or more fluctuating parts covered with extremely thin skin in the course of the inflamed lymphatic. After they have been opened they either heal quickly, or the thinned, undermined skin does not unite to the subjacent parts, and the abscess-cavity for many weeks secretes a thin, purulent fluid, until it becomes gradually filled by granulation, and the skin becomes adherent.

Now and then, a subcutaneous, firm node, which is somewhat painful on pressure, and, at first, rather movable, becomes developed here and there during the course of the disease. As it enlarges to the size of a nut or walnut, it becomes attached to the periosteum and to the skin covering it. The node gradually softens, the skin over it becomes of a bluish-red colour and thin, and the node bursts. A little thin, whey-like pus escapes. On applying pressure, a cheesy, friable mass may be pressed out at the same time. It is a long time, however, before the infiltration disappears, and the suppuration continues for a very long period. The greater part of the skin over the node perishes and an open ulcer remains, having hard margins, and base infiltrated with pus, and but slightly sensitive to pressure. In course of time the margins become thin, undermined, or everted, or a portion of the margin may become adherent to the granulating base.

After some months, granulations will have sprung up on the base and margins. They are unequal in height, fissured, fungating, indolent, and bleed easily. Ultimately they become skinned over. A thick scar remains and is frequently united to the fascia or periosteum. At other parts and at other times, similar abscesses and ulcers are formed over carious or necrosed bones. We become aware of this fact by using a probe. Under these circumstances, the inflammation and suppuration may last for years. The results of such complications are the formation of fungating granulations which are easily destroyed and become regenerated again, callous, thickened margins to the ulcerations of the soft parts, repeated burrowing of matter, the formation of abscesses in the neighbourhood, and, after the necrosed (bone) has separated, the formation of funnel-shaped scars adherent to the bone.

Periostitis and ostitis, caries and necrosis, however, occur without any symptoms of inflammation or of infiltration having previously existed. The bones of the forearm and the tibia become thickened and indurated (sclerosed) over a considerable extent of their course. This applies also to the bones of the metacarpus and of the metatarsus, and the phalanges of the fingers and toes. The metacarpus becomes increased in breadth on this account, the individual metacarpal bones are pressed asunder. The fingers are separated as if they were dislocated, or, in consequence of the exfoliation of the necrosed portion, or of the whole of a phalanx, the scars and tendons retract, and cause the fingers to become shortened, curved, and distorted. Similar changes occur on the foot.

Adhesions of the sheaths of the tendons with one another and with the cicatrised and retracted skin over them, have also formed, in consequence of the suppuration and inflammation, arising from various causes, described. They will tend to increase the already existing flexion and distortion of the joints, and the diverging fingers will, at the same time, be placed in the most varied positions of divergence, contraction, and retraction, will be affected with real or false anchylosis, or actually shortened, owing to partial necrosis. These conditions have not unfrequently caused lupus to be confused with Lepra mutilans, and this may occur the more easily if, as is the case in the late stages, the eruptive spots of lupus have disappeared. In addition to all these changes in the subcutaneous tissue, the processes of evolution and involution of fresh nodules of lupus, partly in intact and partly in cicatricial skin, still go on uninterruptedly.

Besides the very varied, merely inflammatory or suppurative processes we have mentioned as taking place in the various layers of tissue, that condition which we have described (volume iii., p. 135) as Elephantiasis Arabum also becomes gradually developed. The first symptom of this is chronic œdema (œdema lymphaticum, erysipelas notum). Any chronic hyperæmia or inflammation may cause such œdema, and the more readily in proportion as the part of the body affected occupies a dependent position. The persistent eruption of lupus spots is itself attended by hyperæmic or even inflammatory conditions, and slight œdema is produced. The occasional attacks of erysipelatous inflammation and lymphangitis considerably increase this. The intercurrent abscesses, periostitis, caries, and necrosis, and the suppuration, lasting for years, which accompanies the latter, all tend, owing to the active and passive disturbances of the circulation accompanying them, to maintain the œdema of the member attacked by lupus. Such œdema not only itself leads eventually to a transitory increase in the bulk of the affected part, but also causes (as we have noted at the place quoted) a new formation of connective tissue, hypertrophy of the subcutaneous cellular tissue, of the skin itself throughout all its layers, and of the bones, and connective-tissue degeneration of the muscles. The affected extremity, therefore, becomes permanently enlarged and deformed, and, for this reason, as well as on account of the metamorphosis of the muscles, comparatively immovable. In fact, all the symptoms of Elephantiasis Arabum are completely developed. The original appearance of the lupus is, of course, considerably altered by such a remarkable complication. It attains its highest degree of development on the lower extremity. The leg, from the knee downwards, is increased even to double its normal size, is cylindrical in form, and continuous with the greatly enlarged, pillow-like dorsum of the foot. The whole forms an unwieldy appendage, resembling an elephant's foot, and becoming broader below, owing to the projection of the toes. In the situation of the ankle-joint there is a deep furrow, in which a macerated, offensive mass of epidermis collects. The foot is not merely swollen out like a pillow on its dorsum, but is widened. The toes, at one time, though increased in bulk, are distinct from one another. At another time they are fused together into one mass, on the dorsum of which certain superficial furrows indicate the former limits of the separate toes.

The skin itself is everywhere enormously thickened, here and there projecting in the form of hard, thick rolls, is firmly adherent to the subjacent structures, and cannot be pinched up in a fold. The surface in some places is smooth, glistening, and tense; at others rough, and covered with dirty, yellowish-green crusts, or with thick, firmly adherent, laminated epidermis; frequently it is moist (eczematous) over large areas, and occupied by superficial or deep ulcers, which may even lead down to necrosed bone, and whose borders and base have a callous or fungating appearance. In addition, there are extensive, superficial, or funnel-shaped, depressed scars adherent to the bone. We frequently meet with red, firm, conglomerate, fissured, readily bleeding, frambœsioid excrescences,* containing isolated collections of pus, and several lines in height, on the dorsum of the foot (springing from patches of the size of a half-crown or the palm of the hand), and extending from this on to the backs of the toes, in the neighbourhood of the ankle-joint, around the malleoli, or spreading to the leg in a strip; or these outgrowths are crusted over with thick, dry, horny epidermis, and feel like spines, such as occur in Ichthyosis hystrix.* The bones of the leg, of the toes, &c., may be felt, through the hypertrophied soft parts, which are indented with great difficulty, to be dense, uniformly thickened, or nodular in places, or to have undergone fusiform enlargements. Such a condition greatly impairs the usefulness of the extremity. Many years must have elapsed before the elephantiasis will have attained such a degree of development as this. In the meantime the lupus may have become checked, and the elephantiasis alone exists, without our being aware that lupus was the cause of its production. Occasionally, however, there are still patches of lupus, or scars caused by lupus, present on more distant parts of the body—on the face, on the nates, &c.—and this circumstance will facilitate the recognition of the connexion between the two affections. In other cases, however, the eruption of lupus persists along with the high degree of Elephantiasis Arabum described. We not only see numerous nodules of lupus in the most various stages of development in the cicatrised and non-cicatrised thickened skin, but nodules of lupus also exist on the warty patches, as is rendered evident by the frequent formation of small abscesses, and by microscopic examination.† As a rule, the elephantoid thickening of the soft parts and of the bones, and the consequent deformity, do not attain such a degree of development on the upper extremity, that is, on the forearm, the hand, and the fingers, as on the lower extremity.

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* Kaposi (Moriz Kohn), 'Archiv f. Derm. u. Syph.,' 1869, p. 413.

Lupus on other parts of the body, the trunk, or the external genitals,‡ does not differ in any of its characters from those of ordinary lupus, and, at all events some of the complications just described are met with, but in a milder form. For this reason we will refrain from giving any special description of them.

Influence of Lupus on the Constitution.

Although it commences during the first few years of the patient's lifetime and continues for very many years, lupus has no perceptible or constantly prejudicial influence whatever on the development and state of nutrition of the individual, or on the exercise of the physical and mental functions. This applies even to cases in which lupus exists on almost all parts of the body, in which (to quote a case in point) the whole of the face, the back and front of the neck, the trunk, from the shoulders over the back and the pelvic region in an almost confluent form, the mammary and abdominal regions in a more interrupted form, and the lower extremities, in the form of copious, disseminate and serpiginous patches, had been covered for forty years.

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* Kaposi (Moriz Kohn), loc. cit., p. 414, u. Taf. iii., fig. 7.

† loc. cit., Taf. iii., fig. 6.

‡ We have only once met with lupus on the penis (Præputium).

The persons affected attain the average size; their osseous framework is well developed; their state of nutrition, unless the surrounding circumstances are too unfavourable, is now and then remarkably good; their muscular development is powerful and will bear exercise; their subjective sensations, their power of sleeping and eating, quite normal, and their mental capacity not in the least interfered with. This applies to males as well as to females.

Notwithstanding that, in many quarters, lupus is regarded as being of a scrofulous character, we have no sufficient reason for thinking that symptoms of scrofula are met with, as a rule, in conjunction with lupus. Very many of the patients are neither anæmic, nor have any glandular enlargements, nor caries, nor necrosis, even though the lupus may have lasted for some years.

It is especially worthy of note that in females menstruation goes on for years quite normally. We have even known conception occur, and to be followed by a normal pregnancy and the birth of a well-developed and quite healthy offspring.

We have, of course, met with patients affected with lupus who presented undoubted symptoms of scrofula, conjunctivitis and keratitis chronica, enlargement of the glands, distension of the abdomen, a defective state of nutrition, &c., &c. The number of these, however, was not sufficiently large, in proportion to the whole number of the patients affected with lupus, to warrant our considering that there is any constant intimate connexion between scrofula and lupus. This applies, more especially, to the cases in which lupus is confined to certain localities.

On the other hand, symptoms of chlorosis (in females), emaciation, and occasionally pulmonary phthisis and its well-known consequences, leading even to a fatal result, make their appearance not unfrequently during the course of a widely diffused eruption, especially when there are local symptoms complicating the case, such as the formation of abscesses, adenitis chronica and suppurativa, necrosis of bone, repeated attacks of erysipelatous inflammation, &c., &c. This deteriorating influence of lupus on the constitution is, however, as a rule, only a transitory one, and the general health becomes fully restored as soon as the local, aggravating affections diminish in severity or wholly subside.

Etiology.

Many theories have been advanced as to the causes of lupus, but we will only consider two of them, which are accepted by the greater number of authors.

1. Most of the older and modern authors consider scrofula to be a cause of lupus. Accordingly we find that Fuchs* classes lupus as a subdivision of the "Scrophuloses," and, indeed, as the fourth subdivision, along with Favus, Alphus (Psoriasis), Rhypia, Molluscum, Kelois, Scrophulophyma, Scrophulonychia, Scrophulelcosis, and Maliasmus (!). Plumbe,† who essentially follows Rayer, calls it a strumous affection, a designation which has been adopted in England up to the present time to indicate "Scrophulosis" itself. Erasmus Wilson, who gives the same general designation to lupus, ranks it among his Scrophulodermata.‡ Most of the French authors have also regarded lupus as a scrofulous affection; thus, Hardy§ calls it Scrophulide tuberculeuse, Devergie,|| Bazin,¶ Scrophulide maligne.

Certain recent authors, Billroth** and O. Weber,†† have considered lupus to be related to scrofula, but not so definitely,

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* 'Die krankhaften Veränderungen der Haut. und ihrer Anhänge,' Göttingen 1840, 2 Abth., p. 101.

† 'A Practical Treatise,' &c., 1837, p. 101.

‡ 'On Skin Diseases,' London 1867, p. 417.

§ 'Leçons sur les Maladies de la Peau,' Paris 1869.

|| 'Traité pratique des Maladies de la Peau,' Paris 1854.

¶ 'Révue Médicale,' 1857, Juin., pp. 643, 719.

** 'Allgem. Chirurgie,' Berlin 1869, p. 449.

†† O. Weber, in Pitha-Billroth's 'Lehrb. d. Chirurg.,' 2 B., 2 Abth., 1 Liefg., p. 55.

whilst Virchow* and Klebs† have expressed opinions antagonistic to the view that scrofula is the cause of lupus.

We are far from disputing the view, held by laymen and physicians alike, that in many young persons the general state of nutrition is such as to give the constitution a peculiar type, which we generally indicate, now-a-days, by the term "Scrophulosis." But we cannot overlook the fact that we have no clear conception of what we mean by the term scrofula. No one when he uses the term scrofula confines himself to the etymological sense of the word. According to Virchow's‡ lucid explanation, the word "Scrophula" is a literal translation of Chœrus (*Χοῖρος*=scrofa,=a young swine), and probably refers to the obliteration of the submaxillary furrow by the glandular swellings which are present there. The idea that scrofula was a peculiar dyscrasia, though originating in the school of Salerno, was not generally accepted until advocated in the works of Cullen, Kortum, and especially Hufeland. In England the phrase "strumous affection" is generally used in the same sense. The word struma is not understood to imply what it generally has done since the time of Kortum, a swelling of the thyroid gland, but what was meant by Celsus,§ who, as is evident from the text, included under struma, general, chronic, indolent swellings of the lymphatic glands, associated with a feeble constitution. From the participation of the lymphatic system, or of the lymphatic glands, or an alteration in the preparation of the lymph, arose the expression lymphatic constitution or lymphatic temperament, which has been used in some quarters, and especially by the French, since the time of Cullen, and which has the same meaning as the scrophulosis of the

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* 'Geschwülste,' Berlin, 1864-65, 2 Band, p. 493.

† 'Handb. der pathol. Anatomie,' Berlin 1868, 1 Lief., p. 79.

‡ 'Geschwülste,' ii. B., p. 558.

§ Celsus, Medic. libri octo., Londini 1837 (Georg Futvoye). Lib. v., cap. xxviii., 7 (p. 191). De Struma: Struma quoque est tumor, in quo subter concreta quædam ex pure et sanguinæ quasi glandulæ oriuntur: quæ vel præcipue fatigare medicos solent; quoniam et febres movent, nec unquam facile maturescunt; et sive ferro, sive medicamentis curantur, plerumque iterum juxta cicatrices ipsas resurgunt. . . . . . . Nascuntur maxime in cervice, sed etiam in alis et inguibus, et in lateribus. . . . . . Quæcunqe autem ratio curandi est, corpus, puro ulcere, exercendum atque alendum est, donec ad cicatricem perveniat.

Germans and the strumous affection of the English. No precise idea, however, is attached to any of these expressions.

The effect of this upon medical etiology has been unfortunate. Ignorance of etiological influences, whether due to incapacity on the part of the investigator, or to the intrinsic difficulties of the subject itself, is only too easily concealed by the use of words so vague in their meaning. The study of skin diseases, in particular, has been much hindered by the predilection shown for the use of the term scrofula. Nevertheless, as we have stated, we do not by any means deny the existence of a scrofulous diathesis. It is desirable, however, as far as possible, to define the meaning of the term. However difficult this may be, we must, at any rate, admit that the definition attempted by Virchow and Billroth entirely coincides with our idea of scrofula. Billroth says,* "We consider that a scrofulous diathesis exists in those cases in which, owing to a slight and transitory irritation, a process of chronic inflammation is set up in some part of the body, and not only persists after the irritation has subsided, but also spreads independently, and terminates most frequently in suppuration or caseation, rarely persisting as a purely hyperplastic† process." Chronic, indolent swellings and inflammations of certain structures, ending in suppuration or caseation, also become developed. The lymphatic glands are the first to be affected, then the subcutaneous cellular tissue, the bones, joints, and mesenteric glands. Amyloid degeneration of the liver, spleen, and kidneys follows, and is associated with distension of the abdomen, albuminuria, and leukhæmia, and induces a peculiar cachexia. We do not denominate these processes themselves scrofula, but simply mean to imply that they are due to a certain diathetic condition, and it is to this alone that the expression refers. As these conditions make their appearance, without any ascertainable cause, much more frequently in young people, and, though they certainly occur in old people, are, for the most part, manifestly the result of some other disease, we only make use of the term scrofula when the conditions named have become developed during early life.

From this point of view, we cannot in any way regard lupus as due to a scrofulous diathesis. We have, it is true, seen cases in which all the symptoms of scrofula were present at an early stage; swelling and suppuration of the glands, enlargement of the phalanges, tumor albus, exudation into the pleural cavity, and amyloid degeneration of the liver and kidneys. But these cases have been so few, in comparison with the great number of other cases of lupus unassociated with such symptoms, that we cannot properly attach any importance to them. On the contrary, we are in a position to assert that the great majority of persons affected with lupus, even with lupus universalis, if placed under sufficiently favourable conditions, as regards dwelling, nursing, food, &c., enjoy exceedingly good health, are well developed, muscular, and able to follow their employment, and, apart from the affection of the skin, must be regarded as perfectly healthy individuals.* As regards females, we have already mentioned that we have observed normal menstruation occur, conception take place, and a healthy offspring result. If in the course of a widely diffused eruption of lupus, lasting for many years, enlargement and suppuration of the glands, subcutaneous nodes and abscesses, enlargements of the bones, caries, necrosis, &c., do eventually occur, we must regard these merely as complications and consequences of the local irritative processes which invariably accompany the lupoid infiltration. They have the same signification as the analogous complications which become developed on the lower extremity when persistent disturbances of the circulation and an elephantoid condition result from bony callus, varicosities, syphilitic gummata, &c.

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* Pitha-Billroth's 'Lehrb. d. Chirurgie,' i. B., 2 Abth., 1 Heft, 3 Lief., p. 311.

† See vol. i. Rindfleisch's 'Path. Histol.,' New Syd. Soc., p. 108.—Tr.

Many authors, though they do not precisely consider lupus to be a syphilitic disease, yet look on it as due to an hereditary syphilitic taint. No satisfactory proof in support of this view has ever been advanced however, and such proof is more necessary in the case of syphilis, because the latter has precise clinical characteristics, not vague ones like those of scrofula. The advocates of the hereditary syphilitic origin of lupus have not explained their meaning by any means as clearly as is desirable, when treating of a supposed specific disease. Thus Veiel† says,

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* Hutchinson (Clin. Lect. on Lupus, &c., 'Lond. Hosp. Rep.,' vol. ii., 1865) notes that though the patients themselves may not show signs of struma, &c., relatives of theirs may have suffered from phthisis.—Tr.

† 'Mittheilungen über die Behandlung der chronischen Hautkrank-

"The constitution suffers but little from lupus alone, on the contrary, lupus patients have a vigorous aspect though they are scrofulous (?). Acquired and inherited strumous affections and inherited syphilis are the most frequent causes of lupus." Er. Wilson, treating of the same subject, says,* "Lupus seems to depend upon a scrofulous taint of constitution; I believe hereditary syphilitic taint would be the more correct expression." Among 57 cases of lupus, Veiel (loc. cit.) ascertained that the father had had syphilis in 11 of the cases, and found evidences of past syphilis in the patients themselves in 5 cases. We cannot ourselves quote a single similar case, and we do not know that others have been able to establish the fact.†

On the other hand, lupus is distinctly considered to be non-hereditary. Veiel (loc. cit.) gives a single case in which the father of a lupus patient had suffered from lupus. I am not aware of any such case, and Hebra has only seen lupus twice in the children of the same mother. On the contrary, we have seen quite healthy children whose mothers were affected with lupus.

No one has asserted that lupus is contagious.

Though every form of lupus cannot be attributed to hereditary syphilis, however great the inclination to do so might be, many authors have considered one variety, at least, as due to this cause, and have named it Lupus syphiliticus. No one, however, has described it sufficiently definitely for it to be recognised as syphilitic simply and entirely by its clinical characters, without the help of doubtful statements obtained from the patients. The opinion that there is a Lupus syphiliticus still holds its ground at the present time. If we inquire as to the foundation on which this opinion is based, we shall find that it simply and solely consists in the external similarity between many of the forms of lupus and a syphilitic eruption of small tubercles, and in the difficulty which is therefore experienced in diagnosing between the two. In the first place we must admit

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heiten, in der Heilanstalt für Flechtenkranke in Canstatt,' Stuttgart 1862, p. 104.

* 'On the Diseases of the Skin,' London 1863, p. 342.

† The discrepancy existing between our experience and Veiel's is probably due to the fact that the latter does not appear to have been sufficiently distrustful of the histories which the patients give.

that we meet with cases of ulcerating infiltrations ending in permanent destruction of parts of the nose, in which it is very difficult, at first sight, to tell whether the changes are due to syphilis or to lupus. Many under such circumstances call the disease syphilitic lupus. This appears to be a very convenient way out of the difficulty, for if it is not the one it must be the other. The serpiginous form of lupus also now and then very strikingly resembles a serpiginous syphilide. The two affections are therefore very frequently mistaken for one another. We need only turn to the histories of the so-called syphiloids, Scherlievo, Morbus dithmarsicus, Radesyge, &c., to become convinced that all the apparently mixed forms of Lupus, Lepra, Scrofula, and Syphilis disappeared when a more exact diagnosis led to their separation. The same applies to syphilitic lupus: a case which, at first, may seem doubtful, will, after a longer or shorter period of observation, develop symptoms of a thoroughly peculiar character, and a correct diagnosis can then be made (see differential diagnosis). The exceedingly chronic, indolent course of lupus, its invariable development from small tubercles imbedded in the substance of the skin, the persistence of the individual eruptive spots for a comparatively long period, the slight painfulness even of the confluent and ulcerating nodes, the absence of any favourable result from anti-syphilitic treatment, the almost imperceptible influence on the constitution in lupus, and the experience that it is neither hereditary nor contagious, all lead me, in conjunction with Hebra,* and Virchow,† to believe that lupus and syphilis have nothing in common, and that no sort of mutual interchange exists between them. I cannot, therefore, accept the hybrid Lupus syphiliticus as a subdivision of lupus in accordance with the actual clinical symptoms.

General etiological influences, such as the frequency with which lupus occurs, the age and sex of the patients, &c.,‡ afford just as little information as to the causes which lead to the production of lupus. As regards its frequency and mode of occurrence, our experience has been that it is met with in 1.66 per cent. of all cases of skin disease.* The number of females affected with lupus is slightly in excess of that of the males. Lupus was present on the extremities in 20 per cent. of the total number of cases, that is, in one of every five cases of lupus it exists on the extremities, or, what amounts to the same thing from a clinical point of view, shows a tendency to more general diffusion.

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* 'Allg. Wiener med. Zeitung,' 1857, No. 34.

† loc. cit., p. 493.

‡ Hutchinson (loc. cit.) says: "It (Lupus) is more common in those who have brown hair, brown eyes, florid complexion, and thin sclerotics, than it is in others, and to this combination of physiognomical characters the term 'lupoid temperament' may suitably be given." See, also, remarks on plate iii. in Catalogue of New Syd. Society's Atlas.—Tr.

Age.—Lupus almost invariably becomes developed during the early period of life, rarely, however, before the third year, and almost never after puberty. It must be considered a very exceptional circumstance for lupus to commence after puberty, during the third decade. An outbreak of lupus occurring at a more advanced period, from 30–40, or later, will certainly not be a first attack, but a recurrence of the disease, which may have remained in abeyance for many years. In such cases, on careful examination we shall find evidences of a lupus still in progress, or traces (scars) of a preceding attack, in the situation of the recent outbreak, or in its neighbourhood, or, now and then, in some distant part of the body.

Sex.—The number of females affected with lupus is slightly in excess of that of the males. As our statistics show, however, the difference is very slight.

Station of Life, &c.—Lupus occurs with equal frequency and

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* The patients affected with lupus, discharged (as "cured," "relieved," or "died") from the Department for Skin Diseases in the Vienna k. k. allg. Krankhenhaus, were:

In 1866	27 M. and 29 F. =	56	among	2,471	skin patients.
In 1867	23 M. and 24 F. =	47	„	2,624	„
In 1868	18 M. and 17 F. =	35	„	2,936	„
In 1869	24 M. and 26 F. =	50	„	2,605	„
In 1870	17 M. and 18 F. =	35	„	2,738	„
In five years	109 M. and 114 F.=	223	„	13,374	„

Thus there were 223 cases of lupus amongst 13,374 cases of skin disease in general, that is, 1.66 per cent.

I have not taken any account of the patients affected with lupus who were treated as out-patients, because the number of patients in the Hospital during five years seemed sufficient for the purpose of calculating the percentage. The same statistics will also give an idea of the absolute number of cases of lupus which came under our observation.

with equal severity in country people and in townsfolk, in the poorer and in the well-to-do classes. We have seen widely diffused Lupus serpiginosus of the extremities, and extremely neglected Lupus exulcerans of the nose and of the face, in persons in the very best station in life.

The time of year exercises no influence whatever on the outbreaks of lupus.*

Prognosis.

There is no doubt that any existing patch of lupus of whatever form is susceptible of being cured. The prognosis is doubtful in reference to the possibility of preserving the affected portion of skin more or less intact, of preventing any further loss of tissue, and of removing any defects (of the nose) which may already exist. Experience alone can aid us in this direction. The prognosis is very different, however, as regards the occurrence of further outbreaks of lupus. As a rule it is unfavourable. That is, we can never assert that no further outbreak will occur, nor even reasonably expect such a result, though the part affected may have been excised. Recurrence, sooner or later, forms the rule, therefore, and complete cessation the exception. Lupus may even recur in portions of skin which have been taken from the arm, or the forehead, in performing a rhinoplastic operation. Our remedies exercise no perceptible influence on the constitutional predisposition to repeated attacks of lupus. Nevertheless, there are certain influences which lead us to give a comparatively favourable prognosis.

Lupus vulgaris in the disseminate form, confined to a limited region, thoroughly destroyed, and occurring in young individuals, usually remains latent for a very long time, or disappears permanently.

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* O. Weber (loc. cit., p. 57) is of opinion that lupus regularly improves during the warmer season of the year and gets worse in winter, and that patients affected with lupus for this reason swarm to the hospitals at the commencement of winter.

The latter circumstance, however, which is quite correct, would rather tend to show that the disease has got worse during summer—it really means, that patients affected with lupus, like all others suffering from chronic maladies among the working classes, regard the warm ward and the hospital nursing as the best and cheapest safeguards against the privations to which the rigorous season of the year exposes them.

If lupus has once become widely diffused over large tracts of skin, or occurs in the serpiginous form, it is more likely to recur repeatedly.

Lupus may also disappear spontaneously and permanently. The question of prognosis must also be considered in reference to the changes arising from the number of complications which may accompany it. The kind and degree of severity of these, fully detailed previously, must be well weighed before arriving at any prognosis. The prognosis is modified by the nature of the treatment adopted more than in any other affection of the skin. Energetic and continued treatment certainly avoids many of the bad consequences, and may even lead to a cure. Neglect on the part of the patients, and the adoption of imperfect measures of treatment, will invariably lead to unfortunate results.

Diagnosis.

The discovery of the so-called primary eruptive spots of lupus, which always consist of small tubercles imbedded in the tissue of the skin, is the most certain aid to diagnosis. For this purpose the affected portion of skin must be thoroughly cleansed from all products which prevent a close inspection of the tubercles. All the crusts must be removed, and frequently, also, ulcerating excrescences must be thoroughly destroyed before we can prove the existence of these eruptive spots. We must not, therefore, always expect to form a diagnosis on first seeing the case. As experience shows that fresh outbreaks of lupus constantly occur, a few weeks' observation of the case will afford us an opportunity of seeing an unmistakeable eruption.

The only source of doubt which remains eventually, as a rule, is the similarity existing between lupus and syphilis. This similarity is especially striking in the case of lupus of the nose. The loss of tissue which results, and the formation of ulcerating outgrowths and ulcers, are common to both. The ulcerations in lupus, after the removal of the crusts covering them, have a different appearance to that which is met with in syphilis. Their borders are occasionally sharply defined, and they are rounded in shape, though they are also frequently irregular. They are not so deep as the ulcers in syphilis, being quite flat, or only slightly deeper towards the centre, their margin is less infiltrated, less painful, their base is softer, and not covered over with a fatty-looking substance, but, after it has been cleansed, appears of a bright red colour, bleeds easily, is occasionally fissured, and of unequal depth. On the face, as well as on the extremities, where lupus mostly takes a serpiginous form, the discovery of the flat, isolated nodules of lupus will afford the best aid in diagnosis. They are generally found in the neighbourhood of the ulcerating or hypertrophied nodules of lupus. In the same way, also, we may avoid making any mistake in reference to the larger lupus nodules, which are very similar to those of syphilis. The situation and mode of grouping (circular) of the spots will not afford us any help, as they are similar in the two diseases. On the other hand, a correct history of the progress of the case may sometimes be of use. Lupus has a much slower course than that of syphilis. The latter will spread as widely and cause as great a loss of substance in a few months as the other will in as many years.

Any confusion between an isolated, large nodule of lupus and an epithelioma will be avoided by attention to the characters peculiar to the latter, and especially by its hardness, the state of its margin, and the presence in epithelioma of the marginal, pearlish-grey "vesicles" peculiar to it. A lupoid ulcer is even less likely to be confused with an ulcerated epithelioma. The possibility, however, that lupus and epithelioma may be combined (see p. 64) must not be overlooked. In this case the peculiar features of the two diseases will exist side by side, and will form a distinct contrast.

We must also mention that there is one form of leprosy which closely resembles lupus. (See the chapter on Lepra.)

Lupus vulgaris differs so remarkably in its external appearance from Lupus erythematosus that the two can scarcely be mistaken for one another.

In the cases in which, from one or other of the causes mentioned, there is some doubt as to the diagnosis, it is advisable to keep the patient under observation for some time before forming any opinion.

Anatomy.

Blasius* was the first to express an opinion as to the anatomical conditions in lupus, for he declared that the whole thickness of the skin was involved in the disease.

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* Klinisch-chirurg. Bemerkungen, Halle 1832, p. 96.

Fuchs* gave a somewhat more definite account when he wrote: "The skin is not merely affected in its superficial layers (Secretionsschichten), but is also more or less altered in its deeper parenchyma. The small tubercles penetrate tolerably deeply, and seem as if imbedded in the skin," . . . . and "the excrescences in Lupus exulcerans appear to originate from the papillary layer."

Eduard Berger,† however, was the first to give a detailed description of the topographical and histological conditions met with in lupus of the skin. According to Berger, lupus is a "hypertrophic new growth of cells," which closely resemble the normal cells of the rete Malpighii, and invariably arise from the rete Malpighii.

Since then, lupus has been repeatedly examined. The views held respecting its anatomy are still at variance. The opinions of nearly all modern investigators agree certainly in this, that lupus consists in a new growth of cells; but they differ considerably as to the topographical relations and relative importance of the individual layers and glandular structures of the skin to the lupoid infiltration. Thus, not only Ed. Berger, but also Pohl,‡ following him, consider the Malpighian layer alone to be the starting-point of lupus, whilst O. Weber§ considers lupus to be a "growth of small cells in the cutis, and chiefly in the Malpighian layer." Others, on the contrary, have asserted the corium to be the seat of the lupoid infiltration. Indeed, according to Blasius,‖ Auspitz,¶ Neumann,** the growth affects the corium *in toto.* Virchow†† and Billroth,‡‡ on the other hand, regard the "superficial" layers of the skin as the situation in which lupus commences; Veiel§§ the space between the hair follicles and the sebaceous glands; and Rindfleisch* the connective tissue surrounding the two latter. Lastly, Wedl† and myself‡ consider the tissue of the corium itself, or, as I should prefer to put it, the corium beneath the vascular layer, as the layer in which lupus begins.

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* loc. cit., 2 Band, p. 561.

† 'De Lupo, Dissertatio inauguralis, Gryphiæ,' 1849.

‡ Virchow's Archiv, vi. Bd., p. 174.

§ Pitha-Billroth, 'Lehrb. d. Chir.,' ii. B., 2 Abth., 1 Lief., p. 52.

‖ loc. cit., and Rust's Chirurgie, 1834, 11 Band, p. 396.

¶ Die Zelleninfiltration der Lederhaut., Med. Jahrb., Wien 1864 (Sep.-abdruck).

** 'Lehrb. der Hautkr.,' Wien 1870, p. 298.

†† 'Geschwülste,' ii. Bd., p. 487.

‡‡ 'Allg. Chirurgie,' 1869, p. 449.

§§ loc. cit., p. 103.

The manifest discrepancy which exists between the views above noted depends simply and solely on the circumstance that most of the investigators have drawn their conclusions from lupus in a more or less advanced stage of development. Even Auspitz, who has pertinently criticised the statements of Berger and Pohl, and has described the histological characters of the more fully developed forms of lupus in a manner with which we completely agree, has taken as a specimen of the early stage of lupus one in which the "whole corium, from the papillæ to the subcutaneous tissue,"§ was already uniformly filled with cells. He therefore comes to the conclusion that "the essence of the disease consists in a cellular infiltration involving the whole thickness of the corium proper, uniformly."||

If we examine vertical sections of very young tubercles, we find they always consist of circular nests of accumulations of cells, infiltrated into the tissue of the corium beneath the vascular layer. The bundles of connective tissue are thrust asunder in places, and, in the form of a loop or bow, enclose a large, circular space, which is filled with newly formed cells and a delicate network of fibres, traversed by a few dilated blood-vessels (young granulation tissue). The cells are remarkably small, and contain a distinct, highly refractive nucleus, which is thoroughly stained by carmine in the young groups, but is only slightly so in the older ones. The layers of connective tissue, which separate the individual nests of cells from one another, are quite free from any foreign infiltration of cells.¶ The papillary layer lying over the nests of lupoid cells

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* 'Pathol. Gewebslehre,' 1871, p. 292, New Syd. Soc., vol. i., p. 400.

† 'Grundzüge der pathol. Histologie,' Wien 1854, p. 453.

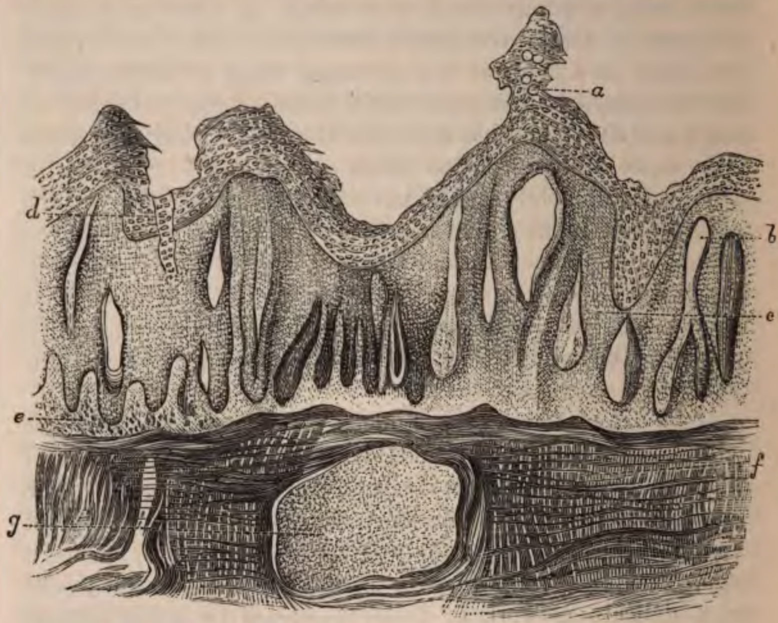
‡ See fig., next page, and 'Archiv f. Dermatol. und Syphilis,' 1869, p. 414, und Taf. iii., fig. 6.

§ loc. cit., p. 10.

|| loc. cit., p. 14.

¶ See fig., next page (and fig. 6, Taf. iii., in the Archiv f. Derm. u. S., 1869, 3 Heft).

does not show any marked change either.* The cells composing the collections in the corium do not seem to have any firm connexion either with the fibrous network present there or with one another. The greater part, or the whole of them, fall out very easily in the course of preparation for microscopic examination, so that, in addition to nests densely crowded with cells, we also find others which are partially or wholly empty. This result, therefore, which may also be obtained wherever young nodules become developed in skin which has already undergone cicatricial atrophy, appears to us to show beyond all doubt that lupus always commences in the form of nests deeply placed in the corium.



LUPUS HYPERTROPHICUS PAPILLARIS S. VERRUCOSUS.—*a*, Heaped-up epidermic cells; *b*, elongated papillæ; *c*, cell-growth in the papillæ; *d*, aperture of a sudoriparous duct; *e*, growth in the *stratum vasculare*; *f*, normal corium-tissue; *g*, cell-accumulation in a "nest" of the corium (Lupus nodule). Hartnack, oc. 3, obj. 4.

In a further stage of development, those changes are met with which have been described by Auspitz, and, as a special form of lupus, by myself. In the first place, the growth of small cells reaches the vessels which run parallel to the surface of the skin and immediately beneath the papillæ, and is continued along these, as well as along the loops of vessels ascending into the papillæ.*

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* Wedl, loc. cit.

The papillæ still seem sharply defined towards the unaltered rete Malpighii, though they are somewhat increased in breadth. Their connective tissue is wide-meshed, there is a delicate, fibrous network, infiltrated with small cells in the large spaces, and their vessels are dilated. The latter changes are also met with in the vascular stratum. The growth of cells also penetrates deeper than the nests in the corium, running along the vessels (Rindfleisch), and thus reaches the convolutions of the sweat-glands and the lobules of fat.

In cases of lupus in which large and prominent nodules are apparent to the naked eye, we, therefore, undoubtedly find the skin *in toto*, from the papillæ to the subcutaneous cellular tissue, infiltrated with cells. In these cases, however, we can still recognise large nests here and there in the corium, and large accumulations of cells around the vessels. In confluent lupus, on the other hand, the infiltration of cells has become diffuse. At this stage, cellular infiltrations are met with in all parts of the corium, partly in large nests, and partly in small collections around the vessels. The latter are especially crowded around the sebaceous glands and hair follicles, which are surrounded by an abundance of blood-vessels. The sebaceous glands and the hair follicles are essentially altered in appearance in consequence. In the interior of the sebaceous glands enclosed by the cellular growth, the enchymatous cells, at an early period, are swollen, enlarged, distended, and the nuclei become indistinct, owing to a yellowish, non-transparent, granular material contained in the cells. Later on, the sebaceous glands shrivel up into small nests, with crumbly, friable contents, or they remain as globular structures, having a transparent appearance, and epidermic contents, arranged in lumps or laminæ (milium). In this form, they may occasionally be met with at a late stage in the midst of the cellular accumulations in the lupus tubercles. Ultimately, they are wholly destroyed, and cannot be recognised any more. The hair follicles and their contents also become involved in a corresponding manner. The nucleated polygonal cells of the outer root-sheath show evidences of considerable proliferation, and this causes the hair follicle to be swollen out here and there. Later, the cells become flattened, and appear to be placed on one another in the form of epidermic laminæ. Sometimes they are arranged around a common centre, as occurs in a "globe epidermique." Owing to the changes going on in the root-sheath, the hair itself does not remain intact. It becomes uniformly fibrous, loses its medullary space, its cortical layers are swollen out here and there in the form of a knot (Pohl); in other parts, it is atrophied; later, it becomes brittle, split up at the point, loosened from its attachment, then lies quite loose in the degenerated epidermic contents of the hair follicle, and is ultimately shed. At last, the hair follicle (and its papilla) becomes wholly destroyed, but can still be recognised for a long time by the peculiar arrangement of its degenerated contents. On such nodules of lupus the Malpighian layer has already undergone change. It is thickened, its cells are large, much furrowed, and contain several nuclei or a vacuole in their interior—in short, show all the signs which occur wherever epithelium is undergoing proliferation. The limits of the mucous layer and of the papillæ are indistinct in places, owing to the cells infiltrated in the latter and those of the first, both becoming opaque, from the presence of molecules and drops of oil. Such conditions led Berger and Pohl to regard lupus as a growth from the Malpighian layer.

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* See fig., *c* and *e* (and 'Archiv f. Derm. u. Syph.,' 1869, loc. cit., fig. 6).

Later on, the microscopic appearances become considerably altered, owing to involution taking place, and the secondary changes permanently produced in the tissues; that is, according as we examine lupus while undergoing exfoliation, ulceration with secondary cicatrisation, or, lastly, with secondary hypertrophy of the connective tissue. In an exfoliating and depressed nodule many of the cells of the nests in the corium will be found to be cloudy, owing to the deposition of fatty granules, less sharply contoured, and shrivelled. In Lupus exulcerans the fatty degeneration of the cells is universal. In vertical sections we cannot find any epidermic layers nor any papillæ in the centre of the ulcer. The base of the ulcer deepens towards the periphery, and consists of cells contained in a fine, fibrous network, and the cells appear as if dusted over, owing to the deposition of small, non-transparent granules. Here and there are numerous large cells with several nuclei, resembling pus-corpuscles. As we advance more deeply, we find cells in the condition of those in fresh nests of lupus, having tolerably sharp contours, and distinct, shining nuclei. The lower and lateral connective-tissue boundaries of the gap are also well defined. On the other hand, the papillæ and their rete adjacent to the ulcer are densely crowded with small, finely granular cells and pus-cells, and their outlines no longer perceptible.

The cicatricial atrophy of the skin, the formation of scars, the degeneration and disappearance of the glandular structures and of the follicles, which result after involution of lupus, do not differ from similar processes from other causes which we have spoken of in detail in the chapter on Atrophia Cutis (p. 251, vol. iii.), and on Scars (p. 291, vol. iii.). More especially we find the mucous layer atrophied, the papillæ in good preservation in some places (Auspitz), in others shrivelled to small, conical processes, as in Striæ atrophicæ cutis.* Occasionally, however, we find nests of cells of recent origin, representing commencing lupus nodules in a thin corium; in other parts scattered groups of cells around the vessels, and the latter, at one time, copious and dilated, and, at another, scanty, and partially converted into white cords, in which a deposit of pigment has occurred, according as the atrophy is of recent or of old standing. The papillæ are always wholly wanting on scars resulting from ulcers, and the immediately adjoining papillæ are cicatricially atrophied. Occasionally, instead of the cicatricial atrophy (thinning) of the skin, or of new growths of connective tissue corresponding to the size and depth of the ulceration, there occurs a hypertrophic new growth of connective tissue, which extends beyond the limits of the preceding lupoid infiltration. The skin is thickened, hard, scirrhous, united with the subcutaneous cellular tissue in a homogeneous mass, which creaks under the knife, and on section has a uniform, fatty (lardaceous) appearance, like Elephantiasis Arabum. Its surface is flat, and covered with a thin epidermic layer—El. lævis glabra—or covered with low projections—El. tuberosa; or, finally, the papillæ themselves are enormously enlarged, and have grown into warty excrescences, over which the rete is enormously thickened, and the epidermic cells are accumulated in layers, like the annual rings on the trunk of a tree, and have become piled on one other so as to form spinous horny scales and spikes—El. papillaris s. verrucosa.* The fibrous tissue of the elephantiasis is not unfrequently infiltrated with young lupoid nests which reveal the origin of the elephantiasis from lupus.† This is the form which resembles Pohl's‡ Lupus fibrosus.

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* Page 261 of volume iii.

The changes which take place in the glandular organs of the skin in the course of the lupoid affection have already been dealt with, as far as their essential features are concerned. We must, however, once more return to the subject, because they have been spoken of in many quarters (Simon,§ Berger, Pohl) as if they were of importance in reference to the character of the lupus, and also because Rindfleisch has based a thoroughly unique theory of the causation of lupus on their occurrence. It has already been noted that both Veiel and Rindfleisch consider the small cells which are met with at the commencement of lupus to originate in the interstitial and enveloping connective tissue of the sebaceous glands and hair follicles. I have, it must be admitted, not been able to show any constant relation between the primary lupoid nests mentioned and the glandular structures in question. But it is clear that the growth frequently commences in these situations, for the new growth invariably commences around the vessels, and always extends along them. It is around the sebaceous follicles and the hair follicles in the corium that the vessels form the richest network, and the connective tissue surrounding them forms the most vascular portion of the corium. That the growth, when it attacks portions of skin copiously supplied with sebaceous glands and hair follicles, very frequently commences around the latter, may also be shown from the fact that they undergo degeneration in the manner described at such an early period. The glandular acini are filled with large cells arranged together in lumps, and then often remain as milium-like structures. The cells of the outer root-sheath become flattened, the hair is swollen out here and there into a knot (Pohl, Rindfleisch), and at other parts is atrophied, and ultimately forms the friable, laminated centre of the root-sheath degenerated into epidermis. Now and then the configuration of the hair follicles, and of the sebaceous glands, is so far retained that the milium-like acini and the degenerated hair follicles together form a glistening white, acino-nodular structure, with the central, cord-like remains of the hair follicle directed towards the surface of the skin. (Pohl, Rindfleisch.) As Rindfleisch himself says,* "these changes are in no sense peculiar to lupus." For they are always observed in the course of any neoplastic, and especially chronic, inflammatory process which causes cicatricial destruction of the skin. The same applies to the degeneration and destruction of the sweat glands which are found in lupus, as well as in Elephantiasis Arabum† and in Lupus erythematosus.‡ Although Rindfleisch says that the degeneration of the sebaceous glands and of the hair follicles described are not, of themselves, characteristic of lupus, and distinguishes the growth in the neighbourhood of the sebaceous glands, which always precedes the degeneration, from the epithelial contents of the glandular structures by the small size of its cells, yet he holds these changes to be so distinctive of the essential character of lupus that he designates the latter "Adenoma of the sebaceous and sweat glands," and will "undertake to diagnose lupus by microscopic examination as easily as carcinoma."

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* See p. 138 of volume iii.

† See fig. (and 'Archiv für Derm. u Syph.,' 1869, 3 Heft, Taf. iii., fig. 6).

‡ loc. cit., p. 207.

§ 'Hautkrankheiten,' 1851, p. 295.

The greater part of the clinical symptoms which we described formerly are naturally explained by the anatomical conditions just detailed. The accumulations of cells scattered in groups throughout the corium appear originally as disseminated, indistinctly margined, yellowish-red points, and become more definitely tubercular in proportion as the growth involves the papillary layer. The moderate hyperæmia which accompanies the new growth gives the spots their red colour. The subsequent desquamation of the epidermis, the symptoms of weeping, suppuration, depression beneath the surrounding level, the ulceration, the cicatricial atrophy of the skin, the formation of scars, and the hypertrophic connective-tissue new growth, which is developed now and then, result, on the one hand, from the chronic course of the disease *in toto*, and from the retrograde metamorphosis (fatty degeneration, suppurative destruction), which the cells composing the nodules of lupus undergo, and, on the other hand, from the hyperæmic and inflammatory processes accompanying this metamorphosis. It will not be superfluous, however, to discuss the special histological and biological peculiarities of the cells themselves in lupus, as they appear to be especially important and distinctive in reference to the character and course of the local affection. In the first place, we must note their small size, which is pointed out by most authors, and by which they are obviously distinguished from the much larger so-called inflammatory- or granulation-cells. In the second place, their remarkable persistence is noteworthy. They not only remain for months without undergoing fatty metamorphosis, but they are even only slightly affected by suppuration going on in their immediate neighbourhood, so that, in the ulcerative forms of lupus, complete suppurative destruction, and granular, fatty degeneration of the cells may be met with in the uppermost layers of the patch of lupus, whilst, in the deeper portion, the nuclei of the cells may still be very distinct.

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* loc. cit., p. 292. New Syd. Soc. Transl., vol. i., p. 400.

† Gay, 'Archiv f. Derm. und Syph.,' 1871, 4 Heft.

‡ Kaposi, ibid., 1 Heft, 1872.

This persistence of the cells in lupus not only accounts for the long time during which the individual tubercles last, and for the extreme slowness of the process of involution, but, also, it seems probable to me that the formed elements of lupus need not necessarily always undergo destruction, but may become a permanent structure (connective tissue), and that they are, biologically, more highly organised than the cells of a syphilitic new growth. The new growths of connective tissue which remain in the corium as scars, or as sclerosed fibrous tissue, and produce the firm, scar-like condition of the skin and its scanty supply of glands—in short, the connective-tissue new growth—proceeds, in great part, undoubtedly, from the fibrous network in which the lupus-cells appear to be deposited, and, in part, from the products of the inflammation which accompanies the lupus (migratory cells, proliferation of the connective-tissue corpuscles). The great stability of the lupus-cells makes it seem probable to me, however, that they themselves, now and then, or in part, at least, share in the production of the new connective tissue.

Treatment of Lupus.

Since we have learnt to distinguish this disease from others which resemble it, a vast number of remedies and plans of treatment have been adopted, and with very varying success, in combating this very obstinate, disfiguring, and destructive malady. They are either used *internally* or *externally*.

Internal Treatment.

We have two objects in view in treating lupus internally. One is to remove the supposed dyscrasia or predisposition (whether it be regarded as, or supposed to be [see Etiology]; scrofula or syphilis; or a combination of the two,* or simply chlorosis, or, lastly, a specific lupus dyscrasia), and thus to cause the existing lupus to disappear and to prevent its recurrence. The other is to destroy, or rather to cause the disappearance, the involution, of the existing lupus.

The same remedies have always been employed for either purpose, have been recommended more or less strongly, and have been found more or less successful. They are: Cod-liver-oil, Iron, Iodine, Iodide of Iron, Iodide of Potassium; Calcis Hydrochloras, Oleum animale Dippeli, Deut-iodide and Proto-iodide of Mercury, Bitter tonics, Antimony, Baryta muriatica, Arsenic,† Pilulæ Arsenicales, Liquor Arsenicalis Fowleri; Ferrum oxydulatum arsenicum; and Decoct. Zittmanni. Though some physicians have thought that they have observed a cure result after the internal use of one or other of the remedies mentioned, and especially after the use of cod-liver oil, even for only four months (!) (Valérius, Lemery‡), we, nevertheless, do not hesitate to declare that all of them are quite inert. We are but too surely convinced that no cure of existing lupus ever results directly from any kind of internal treatment whatever at present known, and that an ultimate involution must be entirely ascribed to the "number of years"* the treatment has been continued, *i.e.*, to the lapse of time. We do not, however, refrain from the persistent use of internal treatment by any means whatever which experience has shown may be serviceable in the removal of any anæmia, chlorosis, or undoubted scrofulous symptoms which may be present. We administer iron, cod-liver oil alone, or with the addition of iodine (one grain to two ounces of the oil), Liquor Ferr. Vinos. Arsenicalis (Wilson, modified by Hebra; Liq. Fowleri drachmam, Tinct. Mart. Pomat. uncias duas, Aqu. Menthæ unc. quatuor. A tablespoonful to be taken twice a day). By the aid of these and the like, bitter tonics, strengthening food, wine, and especially good beer, and general dietetic and hygienic measures, we endeavour to improve the patient's general condition on ordinary therapeutic principles, but we do not in the least expect that the lupus will be improved or cured, or that its recurrence will be avoided. We have found that in certain individuals recurrence only occurred after a long interval, or not at all after the successful destruction of the lupus by local remedies, if, at the same time, the patient's constitution had also improved. We have, however, in other cases found recurrence to be delayed just as much, though the patients were reduced by some intercurrent disease. On the other hand, we so often see Lupus universalis showing no tendency to disappear in thoroughly well-nourished and robust individuals, that we have abstained, in the case of the latter, from any internal medication, even from the use of so-called roborants, because, according to our experience, they are wholly without effect on the lupus itself.

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* Erasmus Wilson, loc. cit. Dr. Valérius Ant., 'Note sur deux nouveaux cas de Lupus ou dartre rongeante,' extrait du Bulletin de la Société de Médecine de Gand, à Arlon; 1857, writes, p. 5: "Le Lupus compliqué d'une diathèse scrophuleuse d'origine syphilitique."

† Bateman narrates a case of lupus in which a cure resulted from the internal use of arsenic. Also Albers (Rust's Chirurgie, 11 B., Art. Lupus, v. Blasius).

‡ 'Revue médico-chirurgicale,' vol. iv.

Local Treatment of Lupus.

As a matter of fact, all authors, without exception, have considered it advisable to treat lupus locally, and in the more severe cases have considered it absolutely necessary. Even those who think they have seen a cure result in a short time from the use of internal remedies (cod-liver oil, Valérius), have also assiduously employed caustics, locally, at the same time,† and have thus furnished a singular comment on the alleged results of their internal treatment.

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* Billroth, loc. cit., p. 450.

† Valérius, loc. cit., p. 4. Iodide of lead and iodide of sulphur ointments.

Having stated it to be quite illusory that any internal treatment exercises a direct influence on lupus, we may also say just as plainly that we have only seen success follow the use of local treatment, and it is only from such that it can be expected.

The objects of local treatment are—1st, the destruction of the existing nodules, in whatever stage of development or of involution they may be; 2nd, the cure or alleviation of any complicating morbid processes and secondary changes.

The destruction of lupus may be brought about either by such agents as will destroy or remove the lupus tubercles quickly—at once, to some extent—caustics. Or we simply accelerate, by local applications to the tubercles, their spontaneous, but slow metamorphosis and involution.

Both objects may be attained by a great number of remedies, if these are well chosen and applied at the right place and in the proper manner.

Owing to the importance of the subject, we will discuss in detail the remedies and methods of procedure which are most commonly used, and have been found most successful in the treatment of lupus, and also the special indications for their employment.

Caustics.

Arsenic, in the form of Cosme's paste,* modified by Hebra—our "arsenical paste." The formula for it is R. Arsenici albi grana decem, Cinnabaris factitiæ drachmam semis, Unguent. Rosati unciam semis. The paste is spread on linen to the thickness of the back of a knife. Strips a finger's breadth in width are cut off from this, as the affected patch of skin which is to be cauterised can be covered more uniformly with these than with a single large piece. When they have been thus applied, charpie or wadding is placed over them. The whole is then firmly compressed and fixed by means of strips of strapping, and a broad bandage (flannel or linen). The dressing is left on for twenty-four hours, and is then renewed with fresh paste on the same plan as before, except that the patch of skin must, first of all, be well cleansed. At the end of the second day the paste is again applied for the third time as before, and is removed at the end of the third day. At the end of the first day, as a rule, there are not any, or only slight, changes to be seen on the portion of skin under treatment. Up to this time, also, the patient will not have felt the slightest pain. In the course of the second day of the application of the caustic, stabbing, dragging pains will have been complained of, and, on the removal of the dressing, the skin will be seen to be somewhat swollen, and the separate nodules of lupus will be recognised by their grey, macerated surface. During or towards the end of the third day the pain will be tolerably severe, and will radiate from the cauterised part in all directions, and may last for three or more hours. The part around the portion of skin covered by the paste will be swollen and œdematous. When the application has been made to some part of the face, the œdema will chiefly affect the eyelids, and the eyes will be closed—a symptom respecting which the patient's fears may be calmed at once. After the removal of the dressing at the conclusion of the third day's application, each of the lupus nodules, the smallest as well as the large and confluent ones, will be found charred brownish-black, the surface here and there will be grey, macerated, and covered with a thin pus, and the individual scabs corresponding to each nodule will be sharply defined at their periphery from the surrounding healthy skin. The pain disappears very quickly and completely, and the œdema in two or three hours.

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* See p. 42, vol. i.—Tr.

The very great advantage which attends the use of this paste, and on which too much stress cannot be laid, consists in the fact that the healthy skin is not in the least affected by it, not even excoriated, whilst each individual lupus nodule is invariably and thoroughly destroyed. The advantage is obvious, if we consider the condition of the lupus and the further results of the cauterisation thus carried out. The eschars are numerous, there are as many as there were lupus tubercles and confluent nodes on the affected patch of skin. After 3–5 days the eschars are thrown off by suppuration. There remain the same number of punched out, smaller and larger ulcers—the skin looks as if it had been stamped in many places with a punch. Each ulcer, however, is comparatively small, and everywhere intervening islands and bridges of healthy skin are left, from which, after granulations have sprung up, cicatrisation proceeds rapidly. This is accomplished in as many days as it would require weeks if the numerous small ulcers had coalesced into one large one. The sightly appearance of the scars, also, is enhanced by the fact, that if there are many of them they are necessarily but small. The arsenical paste is indicated, therefore, in any locality where the preservation of even the smallest portion of healthy skin is desirable, as is the case especially in lupus of the face; and, also, where many small lupus tubercles are scattered over a large area, and here and there appear to be situated deeply in the corium. We can destroy, in this way, by a single application, many hundreds of spots which it would be tiresome to attempt to destroy individually with any other caustic, and to attempt to do so at one sitting would be quite impracticable, and exceedingly painful to the patient. The period of three days above mentioned does not apply absolutely to all cases. If the lupus nodules, owing to some other treatment (application of plaster, cauterisations, &c.), have been deprived of their epidermis, or if they are ulcerated, the arsenical paste may cause a complete eschar to form in one or two applications, each lasting for twenty-four hours. On the other hand, it may be necessary to apply the paste for four or five days successively instead of for three, if the nodes are thick and bulky, or covered with elevated vegetations. In such cases the series of applications may be repeated twice or thrice immediately after the eschar from the preceding one has fallen off, and before cicatrisation has ensued. The arsenical paste may be applied in the same way to scars in which fresh lupus nodules make their appearance. In this case, the latter only are cauterised, and not the scars.

Cautions have been repeatedly given in many quarters (Fuchs, loc. cit., p. 564. V. Bruns, 'chirurg, Heilmittellehre,' Tübingen, 1869. Er. Wilson, loc. cit., p. 344 (6th edit.) against the use of arsenic as a caustic, because fatal poisoning has resulted from its employment, owing to the arsenic having been absorbed from the cauterised part. We also have noted a case which occurred in Hebra's clinique (p. 378 of volume iii.). These mishaps only attend the use of pastes which contain large quantities of arsenic, such as the one formerly employed by Hebra, which consisted of equal parts of arsenic, opium, and creosote.* We have used the arsenical paste which we recommended just now in several hundreds of persons, in children and in old people, and have certainly applied it in the treatment of lupus many thousands of times, and we have not once met with any ill effects from its use. It is advisable, however, to restrict each application of the arsenical paste to an area not more than twice the size of the palm of the hand, for we must not overlook the inflammation and suppuration which are caused by the cauterisation.

Dupuytren's powder, containing one grain of arsenious acid to ninety-nine of calomel, is sprinkled over ulcerating or sprouting parts to the thickness of a line, or dusted on by means of a small piece of linen. Its effect is but slight.

Nitrate of Silver.—A stick of nitrate of silver is admirably adapted for the treatment of isolated, small, or confluent lupus tubercles. If skilfully used it easily penetrates into the substance of the lupus nodule, and by its means we may eradicate each tubercle from its bed. The nitrate of silver possesses the advantage that we can never cauterise too deeply or too much with it. We always do too little. It does not diffuse easily, only attacks a superficial layer of healthy tissue, which becomes transformed into an insoluble albuminate of silver, and the hand which guides the stick encounters an almost insuperable resistance from the parts not affected by lupus. Nitrate of silver may also be used without any danger for the purpose of cauterising lupus in the neighbourhood of the nose and throat. When brought in contact with healthy mucous membrane it produces a milk-white, thin, insoluble eschar, which prevents its acting any further on the deeper tissues. We need not be alarmed, therefore, even if nitrate of silver in solution, or a piece which has broken off, passes through the posterior nares into the pharynx, or remains stuck in the nose. For this reason, nitrate of silver may be suitably used in any locality in which it is necessary that the action of the caustic should be strictly limited, and in which any diffusion of the caustic in the adjacent tissue or to neighbouring organs must be avoided, especially, therefore, on the face and at the corners of the eyes. We not only, however, apply nitrate of silver to the skin and the mucous membrane of the nose, mouth, throat, and larynx, but also employ it in lupus of the conjunctiva and of the cornea, and not merely by rubbing it over, but by boring it in, and we then neutralise any superfluous, dissolved nitrate of silver by the application of a solution of chloride of sodium (common salt), which is kept ready. We have never witnessed any ill result follow, as regards the eye, from such cauterisation, but we have certainly, in more than one case, seen the pannus-like lupus covering the cornea destroyed, and the sight regained when it had been considered hopelessly lost even by experienced oculists.

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* Hebra, 'Wiener med. Wochenschrift,' 1867, No. 33. The paste mentioned (composed of equal parts of arsenic, opium, and creosote) had this advantage, that it would destroy Lupus, Epithelioma, &c., without causing any particular pain. Though this (see loc. cit., the case of Herr Schr.) has been repeatedly applied without any ill consequences even to open cancerous ulcers, and with excellent local effects, yet, having regard to the sad results in the one case reported, its further employment must be considered inadvisable.

On account of the various advantages mentioned, we regard nitrate of silver (in stick) as our remedy "*par excellence*" in the treatment of lupus. The pain which it causes is tolerably severe, and lasts from one to several hours. The inflammatory reaction is slight.

Concentrated Solution of Nitrate of Silver (equal parts of the nitrate and of water).—It is rubbed in by means of a firm, short-fibred brush of charpie, and may be used with various objects in view. At one time, in order to destroy the young nodules of lupus springing up after large masses of lupus have been destroyed, and the wound caused by the caustic has healed. For this purpose, however, the epidermis must previously have been macerated (by means of plaster, salves, washing with soap, potash, &c.), because otherwise the solution of nitrate of silver will scarcely act on the deeply imbedded lupus nodules. At another time, in order to keep down the granulations on a part which has been already cauterised, so as to produce a flat scar. Lastly, in the form of repeated series of pencillings, to young scars, in order to excite inflammatory reaction in them, to cause the contraction of dilated vessels, to diminish prominent outgrowths, &c., in short, to make the scars paler and flatter.

Potassa fusa.—We rarely employ caustic potash, on account of its ready diffusibility, and because it changes (chars) the healthy tissue into a black eschar; for this reason, we mostly use it on the lower extremities to destroy large nodes and vegetations, and we may use it for the same purpose on the face, but with great precaution. In cauterising in the neighbourhood of the nasal passages, the diffusion of the potash towards the posterior nares and the pharynx must be prevented by plugging the posterior nares beforehand.

Solution of Caustic Potash (Potassæ fusæ drachmam, Aquæ Font. dest. drachmas duas).—We only use this to cause a rapid destruction of the epidermis in order to pave the way for the application of other caustics to the deeply placed nodules of lupus. We employ solutions of nitrate of silver and of potash in conjunction, in order to destroy the deeply situated, young lupus nodules, which occur as a fresh outbreak on a part which has been already energetically cauterised. The solution of potash is rubbed in by means of a brush of charpie. The epidermis over the lupus nodules is more readily macerated than on the healthy parts. Red, excoriated, weeping points, corresponding to the lupus spots, make their appearance everywhere. The whole of the part is now washed with water in order to remove the superfluous potash, and is then dried. By means of another brush of charpie, the part is lightly touched with the solution of nitrate of silver, which causes white eschars to appear on the already excoriated points, that is, on the lupus nodules which have been laid bare. After a few days these are separated by suppuration. The procedure is repeated as often as fresh outbreaks occur on the cicatrised area.

Vienna Paste.—It must be prepared immediately before it is wanted for use. Two drachms of powdered caustic potash and the same quantity of powdered caustic lime are rubbed up with a small quantity of rectified spirit in a porcelain capsule, so as to form a thick, tenacious pap—the Vienna caustic paste. It should be of such consistency that when the capsule is turned upside down the mass will not flow out. The portion of skin which requires to be cauterised should first of all be encircled by strips of plaster applied round it, so as to protect the surrounding skin from the action of the caustic. The paste is then spread on the part to be cauterised, as thick as the back of a knife, by means of a spatula, and covered over with charpie.

Severe pain will be complained of in from three to five minutes. In ten minutes from the time at which the paste was applied, the patient should be placed in a warm bath, or only the part affected soaked in warm water, and the paste washed off. Vinegar (or vinegar and water) is useful for washing, as it neutralises the superfluous potash. The patch of skin acted on is converted into a black eschar, which is somewhat depressed. The pain ceases when the paste is removed. The eschar separates in from five to eight days, and involves the whole thickness of the skin as far as the subcutaneous tissue. The Vienna paste thoroughly destroys the lupus, but it also destroys all the intervening healthy skin. It should be applied to small patches only, most suitably in strips on the confluent tubercles at the margin of a patch of Lupus serpiginosus, and only on parts of the body where deep and extensive scars are of little importance. Only, therefore, on the trunk and extremities, and then over muscular parts merely, not over tendons or joints.

Chloride of Zinc has for a long time been used by surgeons in various ways. Its action on lupus differs according as it is used, just as it deliquesces on exposure to air, diluted with alcohol or water, alone, or in combination with other caustics, in the form of a paste, or in the form of a stick. The chloride of zinc paste is the most active, and may be used in several ways. Canquoin's plan was to allow chloride of zinc to be exposed to the air until it had deliquesced into a thick, white fluid, owing to the absorption of water, and it was then made into a paste with the same, or a double or treble quantity of starch, and applied. In this form it is still employed by many physicians (Devergie, Veiel, &c.). Landolfi's paste,* consisting of chloride of zinc (three parts), chloride of bromine (five parts), and chloride of antimony (one part), made into a paste with powdered liquorice, cannot be recommended, for its odour is very penetrating, and the fumes of the bromine vapour set up severe affections of the mucous membranes (conjunctivitis, coryza, bleeding from the nose, laryngeal spasm, cough, and hæmoptysis). It has been modified by Hebra, so as to make it more convenient for use, the chloride of bromine being omitted. Chloride of zinc (two drachms) and chloride of antimony are rubbed up in a mortar with strong muriatic acid until the chloride of zinc becomes completely dissolved. The mixture is then made into a thick, tenacious paste by the addition of a sufficient quantity of powdered liquorice. This is our chloride of zinc paste. It must be used quickly, or else it dries up and becomes powdery. The addition of a few drops of hydrochloric acid, however, will again partially restore it to a proper consistence. It must be spread thickly on linen, and then applied in strips. It is allowed to remain for twenty-four hours. After six or twelve hours, tolerably severe pain is felt, and may last for some hours. After twenty-four hours the strips are removed. The skin, *in toto*, is converted into a yellowish-brown or yellowish-white eschar, which corresponds accurately to the limits of the strips of paste. The inflammatory reaction in the neighbourhood is moderate. The chloride of zinc paste, therefore, so far resembles the Vienna paste that it destroys the healthy skin as well as the lupus nodules. For this reason its employment is contra-indicated in all localities, such as the face, over joints and tendons in which it is desirable to preserve every bit of unaffected skin, if possible, and to avoid deep loss of substance and the production of thick, adherent scars. On the other hand, it has this advantage, that it does not become widely diffused. We use the chloride of zinc paste most frequently for the destruction of the serpiginous margins of extensive patches of lupus on the extremities and on the trunk, because the destruction of the peripheral margin is the readiest means of preventing the local spreading of the lupus.

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* The composition is given somewhat differently at p. 42, vol. i.—Tr.

Pencils of Chloride of Zinc.—If liquefied chloride of zinc is poured into a style-shaped mould, we obtain a pencil, which may be used as a caustic, but is inconvenient, on account of its hygroscopic qualities and its brittleness. Sticks cut out from the dried, simple chloride of zinc paste (chloride of zinc made into a paste with flour) are also objectionable. The sticks which are formed after the plan suggested by Köbner* and v. Bruns,† by fusing together one part of chloride of zinc, a half, a fifth, or a tenth part of nitrate of potash, a half or a tenth part of chloride of potassium, and moulding into sticks four or five centim. (one and a half to two inches) long, and three or four millim. (one-eighth to one-sixth of an inch) thick are to be preferred. These pencils, however, are not so firm as those of nitrate of silver, and are very hygroscopic. They should, therefore, be wrapped separately in tinfoil, and kept in a well-corked bottle. When required for use, as much of the tinfoil should be peeled off as may seem desirable. The lapis zincicus does not penetrate any further into the cuticle than the pure fluid chloride of zinc does. The superficial layers merely of the epidermis are converted into a white eschar. For this reason the lupus nodules should be deprived beforehand of their epidermis by means of soap, potash, solution of potash, &c.,* if they have not already been exposed by spontaneous ulceration, or by the employment of some other caustic. The stick of chloride of zinc penetrates quite as readily as nitrate of silver into the lupus nodules thus exposed, and acts just as slightly on the healthy tissue. It, therefore, possesses the advantage that we need not be afraid of its destroying too much healthy skin. It also causes less severe and more transitory pain than the nitrate. On the other hand, it has this disadvantage, that the blood does not coagulate beneath the stick, but remains thin and fluid (and of a bright-red colour, like blood which has been whipped—defibrinated), and by inundating the part interferes with the further cauterisation. The bleeding is not, however, of any importance. A compress of charpie will easily check it. Cicatrisation proceeds quite normally after the eschar has separated, which occurs in from three to six days. Owing to the properties mentioned, the solid chloride of zinc is well adapted for the treatment of lupus on any part of the skin, even on the face, but, owing to its not coagulating the blood, it cannot be recommended for use in lupus of the mucous membrane of the nose and of the pharynx. Chloride of zinc which has deliquesced from exposure to the air, or been dissolved in an equal quantity of alcohol, or in the form of a solution consisting of ten parts of chloride of zinc and hydrochloric acid in five hundred of water (Veiel) has much the same caustic action as a concentrated solution of nitrate of silver. These solutions of chloride of zinc are rubbed in by means of a brush of charpie. The epidermis ought to be removed first of all in the manner described. Denuded young lupus nodules and superficial infiltrations may be similarly attacked by means of solutions. The [illegible] is not [illegible] by them.

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* Schles. Ges. für vaterl. Cultur. Sitzung. d. med., Section v., 1 Juli 1870.

† 'Chirurg. Heilmittellehre,' Tübingen 1869, p. 541—Lapis zincicus.

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* The plan of raising the epidermis by the application of a vesicant (Theodor. Veiel, 'Ueber Lupus erythematosus,' Inaugural-Dissertation, Tübingen 1871, p. 87) is unnecessarily troublesome.

Carbolic Acid.—Carbolic acid is met with in commerce in the form of white or yellow, transparent, needle-shaped crystals. They deliquesce very slowly on exposure to the air, dissolve easily in water, and still more readily in alcohol. It smells like creosote. It can only be used as a caustic in the fluid form by means of a hair brush. In contact with the albuminous material of the skin, it forms a white, insoluble, adherent eschar, which prevents its penetrating any further. Its action is also diminished by the sebaceous secretion on the surface of the skin. The part about to be cauterised should, therefore, be previously well washed with soap, in order to remove any grease from it, and the lupus nodules should also be deprived of their epidermis. Even then, however, the carbolic acid does not penetrate deeply enough to destroy the whole thickness of the nodule. The burning pain caused is said to be tolerably severe and lasts many hours, increasing, for a time at first, in severity. Though the eschar is more superficial than that produced by other caustics, it separates more slowly, not for six or eight days. Much time, therefore, is lost in waiting for this to occur. For the reasons above stated, and having abundantly tested its capabilities in the directions indicated, we cannot say that carbolic acid possesses any special advantage. On the other hand, there is no fear that any harm will result from its use.

Proto-iodide and Deuto-iodide of Mercury in the form of ointment, as recommended by Rayer (eighteen grains to one ounce of simple ointment), or in the form of Rochard's ointment (Iodi puri grana septem, Calomelanos scrupulum, leni igne liquefactis adde; Ung. Rosati uncias duas), if rubbed in have scarcely any influence on lupus. When spread on lint and applied, Rochard's ointment excites very severe pain, but does not destroy the lupus in the least.

The same may be said of *the iodide of sulphur ointment* (Rayer, eighteen grains to one ounce of lard).

The action of *the nitric oxide of mercury*, formerly recommended in the form of Ung. Hydrarg. Citricum, is equally unreliable.

The galvanic cautery was first used by Hebra in the treatment of lupus.* The instruments which he uses for the purpose are—

1. A loop of platinum wire ending in a point, which is thrust into the disseminated lupus nodules at a white heat.

2. A conical porcellanous cautery, wound round with platinum wire in a spiral form, used for cauterising the confluent nodes.

3. A flat piece of platinum wire hammered out into the form of a knife, for the purpose of shaving off hypertrophied lupus nodules and frambœsioid outgrowths.

4. The loop of wire for snaring hypertrophic growths, such as a greatly enlarged lobule of the ear infiltrated with lupus.† The operation causes only a moderate amount of pain, and the bleeding, as is well known, is almost nil. Its action is not the same in all localities. In some parts, considerable inflammatory swelling ensues and persists for several days; in others, the reaction is scarcely perceptible. The lupus nodules which have been destroyed fall off in consequence of suppuration, which, however, is very slight. After the lapse of ten or fourteen days the portions of skin infiltrated with lupus become less elevated and paler. Though this plan, owing to the apparatus and assistance required, seems chiefly adapted for hospital use, yet it must be considered as a very valuable addition to our means of treating lupus on account of the essential advantages it possesses.‡

The plan of treatment introduced into Germany by Volkmann is remarkable for its originality and the success which has attended it.§ It consists, first, in scraping off or tearing out the lupus infiltration with a sharp scoop; and, second, in making a number of small scarifications—or Puncturing.*

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* Neumann, Wochenbl. der Zeitsch. der k. k. Ges. der Ærzte in Wien, 1861, Nos. 23 and 24.

† See Jahresb. des k. k. allg. Krankenh., 1866, p. 174.

‡ Mr. Hutchinson has for long used the actual cautery (hot iron) in the treatment of Lupus with the greatest success. The plan is simple, requires no expensive apparatus, and does not necessitate the administration of an anæsthetic, though, of course, in many cases the latter is advisable. Dr. McCall Anderson speaks favourably of the plan, and figures cauteries of different shapes which Mr. Hutchinson devised for particular situations, forms of ulceration, &c.—Tr.

§ According to Th. Veiel (loc. cit., p. 89), Dubini had already cured "the scrophulides by punctures with the 'Lebenswecker'" (an instrument making numerous punctures). (Rapporta annuale dei malati cutanei dell' ospidale magg. Milano 1865, Band iii., p. 329.)

By the first plan, the lupus infiltrations are mechanically removed. Volkmann makes use of v. Bruns' scoop, for the so-called "Evidement," or of others modified from this both in size and shape, round, oval, narrow, sharp scoops. The operator's sense of touch, with a little practice, will easily recognise the difference between the rotten, friable, lupus tissue and the more resistent healthy tissue, and will regulate the force used in such a way as to scoop out the lupus nodules "moderately cleanly" from their bed, whilst the surrounding healthy tissue is not interfered with. The removal is not thoroughly complete, because the lupus infiltration penetrates in microscopic quantity in all directions, from the larger nests through the corium along the vessels. For this reason it is necessary to cauterise the wounds which remain, and to adopt a plan which will remove the more minute lupus infiltrations. For the latter purpose, Volkmann employs the multiple, punctiform scarification. "It has the advantage of directly attacking the diffuse lupus infiltrations whilst it does not affect the skin over them." "Hundreds, or even thousands, of punctures, two lines or more in depth, are made close to one another into the affected portion of skin, by means of a very small-bladed knife with a sharp point. In many cases, at the end of the process of puncturing, the skin appears slightly discoloured, or even suspiciously white, and like minced meat; yet we have never seen gangrene follow. The punctured parts are then covered with lint, which is pressed on in order to check the bleeding, and is allowed to remain till it comes away spontaneously. This procedure is repeated at intervals of a fortnight or a month, three, five, or even eight times. The first time, the knife penetrates very easily into tissues infiltrated with luxuriant cell-growths, and the bleeding is very active. Later, there is more resistance felt, the skin gradually becomes firmer, and the swelling and redness diminish. No scars remain." This method not only causes obliteration of the numerous, dilated vessels, just as scarification does in Acne rosacea and in Telangiectases,† but also sets up secondary inflammation which accelerates the destruction and absorption of the cells of which the infiltration consists. Volkmann states that "at present no lupus has resisted this plan of treatment," and that even severe cases of lupus have been cured in this way in six or eight weeks—an exceedingly brilliant result unquestionably. The second statement must be received *cum grano salis*, however. We have often removed patches of lupus which had existed for years, within a few weeks, by the methods above mentioned—but, cured? that can only be asserted when no return of the disease follows. The operations, according to Volkmann, are exceedingly painful, and render it necessary to administer an anæsthetic each time, which, indeed, Volkmann does for any cauterisation. We must confess that we could not carry out his plan, either at the hospital or in private practice. To anæsthetise twenty or thirty patients affected with lupus twice a week, or even once a week, would be practically impossible. We neither administer an anæsthetic for the application of caustics, nor in carrying out Volkmann's plan, which we have done frequently during the last year; at most, we content ourselves with occasionally producing local anæsthesia. The results which have attended our adoption of the plan of "puncturing" have convinced us that this forms a most valuable aid in the treatment of lupus, but that it is not likely to come into use to the exclusion of other remedies, nor does it promise a certain and permanent cure.

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* 'Sammlung klinischer Vorträge,' Leipzig 1870, No. 13. 'Ueber den Lupus und seine Behandlung,' von Richard Volkmann, pp. 74, 75.

† See pp. 335-6, vol. ii., and p. 363, vol. iii.

We have yet to mention the plan of excising the lupus, or rather the portion of skin affected with lupus. It is obvious that lupus may be got rid of in this way. But, unfortunately, recurrence is just as likely to take place as after the use of caustics, and, what is worse, correspondingly large wounds and scars are left, the evil consequences of which, especially on the face, need not be particularised further. For this reason we must wholly condemn the practice of treating lupus by excision, notwithstanding that Hoppe[*] recommends it as the "best." The plan of excision would doubtless frequently necessitate the performance of plastic operations. It must not be overlooked that we, as well as others,[†] have observed fresh lupus spots become developed in the transplanted skin. For this reason it becomes imperative in all cases to preserve as much skin as possible *in situ*. And most authors whose experience has been similar to our own, have stated that no plastic operation should be undertaken until the disease shows no tendency to return, that is, not till after the affection has been in abeyance for some years. Volkmann alone is so satisfied with the "certainty" with which a cure results from his plan, as to feel justified in performing plastic operations in the midst of, and with skin affected with, lupus.

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[*] 'Zur Behandlung der fressenden Flechte,' J. Hoppe, Bonn, 1849.

[†] O. Weber, loc. cit., 57.

There is another series of remedies and of methods of procedure which only effect the destruction of lupus indirectly. In making use of them we only aim at the gradual removal and involution of lupus, to accelerate, to some extent, its spontaneous involution, which otherwise results very slowly and in proportion to the age of the individual nodules, and thus to shorten the duration of the affection. Most of them act by setting up an inflammatory condition in the affected portion of skin, and others by producing an extreme degree of maceration, or by acting in a specific manner in hastening absorption. No strict line of demarcation can be drawn between them in this way, however, because, as a matter of fact, the various results attending their use depend more on the manner in which they are employed, and the ease with which the skin can be excited to reaction in any particular case, than on any specific action on the part of the remedy itself. Thus, for example, not a few of the remedies previously mentioned belong to this category under certain conditions. *Solution of nitrate of silver* (equal parts) applied with a brush to a portion of skin partly cicatricial and partly infiltrated with young lupus nodules, twice a day for three or six days in succession, produces swelling, inflammation, and pain. We wait until the black, parchment-like scab falls off, and then repeat the series of applications, and so forth. The reiterated attacks of inflammation will cause many of the vessels to become obliterated. This makes the scar paler on the one hand, and, on the other, hinders the development of fresh lupus elements, besides hastening the involution of the existing young lupus tubercles. A series of applications of a solution of *Chloride of zinc* acts in a similar manner. We also frequently make use of *Glycerine of iodine* (Iodi puri, Potassii iodidi āā drachmam, Glycerini drachmas duas) and Tincture of iodine in the same way (by brushing them in methodically and repeatedly), and with the same object in view. All these may be advantageously used to parts where the prominent and bulky lupus nodes have been already destroyed, and the skin is covered with young, vascular scars and recent lupus nodules.

Emplastrum Hydrargyri may be profitably used for various purposes. In the first place to young scars to keep them supple and to cause them to become thin and pale, and to prevent the formation of rhagades and the desquamation of young epidermis. It may also be applied to fresh lupus nodules, which become developed on such parts, and which will now and then, owing to the continual maceration or the pressure produced by the plaster, possibly, also, by its exercising some specific influence, be caused to break down or undergo involution, even though slowly, or, at least, their involution will be checked, and they will, in any case, be prepared for undergoing more rapid destruction on the application of some caustic. Chronic, inflammatory infiltrations and indurations, caused by firm œdema, such as are frequently met with at the base of lupus patches on the face, on the lips, on the extremities, &c., soften and disappear in a similar way during its use. On the other hand, the larger lupus nodes do not undergo involution in consequence of the use of the grey plaster, though it be continued for many months; at the most, they only become somewhat flattened. We cannot, therefore, by any means call the Emp. Hydrarg. the remedy *par excellence* for lupus, though it has been vaunted as such in many quarters. On the contrary, the exceedingly slight influence which the grey plaster exercises on the larger lupus nodes may be taken advantage of for the purpose of diagnosing between them and the nodes met with in syphilis. The latter invariably disappear within a few weeks under the influence of Emp. Hydrarg., whilst the lupus nodes will scarcely have undergone any change within as many months.

Cod-liver oil also seems to have just as little curative influence on lupus. It is, however, useful for softening the crusts in lupus exulcerans, and large, hard lupus masses, as well as exuberant granulations, become rotten and friable, in short, undoubtedly undergo partial destruction under its use. We constantly employ it for this purpose.

The action of all these remedies, therefore, on lupus is manifestly of a very unreliable character. Nevertheless, we learn the great practical value of these and of the whole series of remedies having a "mixed" action in the course of the treatment of cases of lupus. We cannot constantly or at the same time attack all the diseased parts, over their whole extent, with caustics, or by any active mode of treatment. This would be impossible for practical and special reasons. Every severe operation causes a certain amount of shock, and may be followed by inflammation, fever, erysipelas, &c., which, for a time, make it advisable to adopt some less severe methods of treatment. Sometimes in one part and sometimes in another, delay may be dangerous, and it is necessary to interfere quickly. Whilst parts which have been treated and improved to a certain extent are being left alone, till after the lapse of a few weeks, perhaps, we may return to them and again deal with them actively, a fresh outbreak of lupus may have occurred on the area which had barely been cleared, and the whole work has to be begun anew.

In truth, the treatment of lupus is by no means easy. A mere mnemonical acquaintance with the numerous remedies and plans of treatment enumerated is not sufficient to enable us to cope with so obstinate a malady. A physician must have a large experience, and exercise professional and natural judgment, in order to be able to choose the right remedy at the right moment, and to proceed cautiously at one time, and act energetically at another. As our task is only partly accomplished when the mere destruction of the lupus infiltration has been brought about, its difficulty becomes still more apparent. Another and no less important part relates to the treatment of the wounds resulting from the use of caustics, keeping the formation of granulations and of scars under control, combating the large number of manifold and tolerably important complications and sequelæ of lupus which we have previously enumerated. All these matters have to be carefully considered by the physician. It would be impossible, and unnecessary, to give an account of all the possible results of the various conditions met with, and of all the measures of treatment. Individual professional judgment will suffice if we follow out the precepts of general surgery and medicine. We will only mention, that whether sightly scars are formed or not, depends almost entirely on the adoption of a proper treatment of the wound and of the granulations. And we need scarcely say that sightly, thin, flat, mobile scars are very desirable, especially on the face, where lupus is most frequently me twith, and also over the joints. We cannot do better than refer to what we have said at p. 315, vol. iii., in reference to the treatment of granulations and of scars. We will also refer to the account there given as to the prevention, by means of persistent slight cauterisation, of the union of two granulating surfaces, and the deformities and impairment of function liable to result therefrom. We shall have abundant opportunity for making use of these methods in order to prevent contraction taking place at the angles of the mouth and eyelids, and at the anterior nares, union of the external ear with the scalp, of the fingers and toes with one another, and pseudo-anchylosis of the joints, &c. In regard to the treatment of the Elephantiasis Arabum, which not infrequently complicates lupus of the extremities, the treatment we have laid down at p. 148, vol. iii., will be equally suitable to the affection under discussion. The caries and necrosis of the bones, the lymphangitis, the subcutaneous inflammatory infiltration and formation of abscesses, the symptoms of chlorosis, anæmia, tuberculosis, acute or chronic affections of internal organs, &c., which are met with as complications of lupus, must be treated according to general medico-chirurgical principles.

CHAPTER LVI.

(CLASS IX.—MALIGNANT GROWTHS.)

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LEPRA (*Der Aussatz*).

LEPRA Arabum, Elephantiasis Græcorum, Leprosy of the English; Spedalskhed of the Norwegians; **Aussatz, Maltzey** (of the Middle Ages), Limafalsk (Iceland), Malum mortuum, Malmorto (Salernitan school), Mal rouge (de Cayenne), Mal rosso, juzam (Arab.) Krimskaia, Lepra taurica, Rosa asturiensis, Kushta (India), Fa-fung (China), Koban (Africa), Kokobay (West Indies), Ngerengere and Tuwhenna (New Zealand), Morbus Phœnicicus, Morbus herculeus, Satyriasis, Leontiasis (of the old Greeks), Zaraath (Hebr.), Morphœa, Spiloplaxia, Tyria, &c., &c.

History.

All those passages in the Bible in which Zaraath (צרעת) is mentioned, especially, however, the greater part of the 13th chapter of Levit., have always been supposed to mean the same disease as that which is now known by the name Lepra (Aussatz). Many commentators have endeavoured to adapt the clinical symptoms of the disease to the Mosaic description. At most, however, only a few statements, especially those which are contained in Levit. xiii. ver. 3, can be considered as referring to lepra, and they, again, are only applicable to certain of its symptoms. We have already shown[*] that the term Zaraath was applied to any incurable, severe, or contagious disease, and thus it seems probable that not only leprosy, but also some essentially chronic and other merely contagious diseases of the skin (Psoriasis, Scabies, Leucopathia,[*] Syphilis,[†] &c.), were classed under the head of Zaraath. The few unequivocal passages in that part of the Bible render it very probable that lepra prevailed among the Jews who migrated from Egypt; and this may also readily be believed, from the fact that Egypt was, in ancient times, as it is at present, one of the countries infested by lepra; and, moreover, Manetho, who lived only 1200 years after the time of Moses, has testified to the presence of lepra among the Jews.[‡] For this reason, zaraath is always rendered by the word lepra in the Septuagint. According to the representation which we have just given, this is manifestly incorrect, and has contributed greatly to the confusion which has since prevailed in regard to lepra. For, although the LXX. borrowed the name Lepra from the Greeks, the word was even at that time used in the same sense as it is in modern pathology. Hippocrates and the older Greeks, however, attached a different meaning to the term "Lepra." In the writings of Hippocrates, the word lepra is only found in the plural *λεπραί*,[§] associated with *λείχην* and *ἄλφος*, and only signifies white spots covered with rough scales. Later authors subdivided Lepra into Alphos, Melas, and Leuke. At the time of Hippocrates, the lepra of later authors (der Aussatz) appears to have been but little known among the Greeks, at most only by hearsay. The term *φοινικὴ νόσος*[||] of Hippocrates may, as is generally supposed, have been used to indicate it. In Aristotle, we meet with the name *Σατυρια*[¶] (Satyriasis), to which later authors[*] have also attributed the same meaning; Leontiasis (Archigenes) and Leontia (Aretæus), Morbus herculeus, heracleus, are also mentioned. In the last two centuries before Christ, the disease appears, however, to have occurred frequently in Greece, and was even at that time designated Elephantiasis.

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[*] See chapter on Scabies, vol. ii. of this work, p. 165 (note); and Hebra's Atlas der Hautkr.,' 5 Lief., p. 1.

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[*] Levit., chap. xiii. ver. 39, Bokak (בהק).

[†] Finaly, 'Ueber die wahre Bedeutung des Aussatzes in der Bible' (Separat.-abdr. aus., No. 39, u. 41, des Ben-Chananja), Szegedin, 1866.

[‡] Flavius Josephus de Antiqutate Judæorum; contra Apionem, Lib. i., § 26, in Friedreich's 'zur Bible,' Nürnberg, 1848, 1 Th., p. 208. It is true that Manetho speaks of an incredible number—ninety thousand—Jews affected with lepra.

[§] *Oἱ τοῦ Ἱπποκράτους Ἀφορίσμοι.* Glasguæ 1748. *Τμῆμα τρίτον. κ' καὶ λέπραι, καὶ λειχῆνες, και ἀλφοὶ καὶ ἐξανϑήσιες ἑλκώδεες πλεῖσται, και φύματα και αρϑριτικά.*

[||] *ἡ νοῦσος ἡ φοινικίη*, in Hippokr. Prorrheticon., Lib. ii., Ed. D.S.F.C Grimm, Glogau 1837, p. 110. Galenus, xix., 153, morbus in Phœnice et in aliis orientalibus partibus abundans. He translates *νοῦσος φοινικίη* with the word Elephantiasis, in explan. voc. Hip., p. 592.

[¶] De genesi Anim., iv., 48, Ed. Duval, ii., p. 676.

The name Elephantiasis is first found in Lucretius[†] (95 a. Chr.) and Celsus (53 a. Chr.—7 p. Chr.), for a disease which up to that time was, according to both these authors, but little known in Italy. Concerning this disease, Celsus writes[‡]: De Elephantiasi. Ignotus autem pene in Italia frequentissimus in quibusdam regionibus is morbus est, quem ἐλφαντίασιν Græci vocant; isque longis adnumeratur; totum corpus afficitur ita ut ossa quoque vitiari dicantur. Summa pars corporis crebras maculas crebrosque tumores habet; rubor earum paullatim in atrum colorem convertitur; summa cutis inæqualiter crassa, tenuis, dura, mollisque, quasi squamis quibusdam exasperatur; corpus emarescit, os, suræ, pedes intumescunt. Ubi vetus morbus est, digiti in manibus pedibusque sub tumore conduntur, febricula oritur, quæ facile tot malis obrutum hominem consumit. In addition to this unequivocal and very accurate description of tubercular lepra, of the initiatory spots which are, at first, red, and afterwards become of a dark colour, and are associated with thickening and condensation of the skin, of the large and numerous tubercles, and the general disturbance of the system, Celsus also gives a description of white and black spots under the name of Vitiligo, which authors have considered to be altogether, or in part, identical with Lepra Græcorum. Celsus says[§]: De vitiligines specibus. Vitiligo quoque quamvis per se nullum periculum affert, tamen et fœda est, et ex malo corporis habitu fit. Ejus tres species sunt. *Ἄλφος* vocatur, ubi color albus est, fere subasper et non continuus, ut quædam guttæ dispersæ esse videantur; interdum etiam latius, et cum quibusdam intermissionibus serpit. *Μέλας* colore ab hoc differt, quia niger est, et umbræ similis: cætera eadem sunt. *Λευκή* habet quiddam simile alpho, sed magis albida est, et altius descendit, in eaque albi pili sunt, et lanugini similes. . . . . Alphos et Melas in quibusdam variis temporibus et oriuntur et desinunt. Leuce quem occupavit, non facile dimittit. Although it would be difficult to say whether Celsus includes spotted lepra among these three varieties of vitiligo, it is worthy of remark that the whole description tends to show that he recognised a slighter and a more severe form of the disease, and that even he mentions the same aid to diagnosis ("Examen") which we find repeated by physicians of the 12th and 13th centuries* in the diagnosis of lepra: Incidi enim cutis debet, aut acu pugni; si sanguis exit, quod fere fit in duobus prioribus, remedio locus est; si humor albidus, sanari non potest.

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[*] Aretæus (De causis et signis morbor., Lipsiæ 1735, p. 69 B.), Galenus. The name was at one time founded on the supposed lasciviousness of the patients, and at another time it was applied in consequence of the swelling of the ears which exists in patients affected with leprosy.

[†] De rerum natura, Lib. v.: "Est Elephas morbus qui propter flumina Nili gignitur Ægypto in medio, neque præterea usquam."

[‡] 'Medicinæ libri octo.,' Londini, 1837, Lib. iii., cap. xxv., p. 100.

[§] loc. cit., p. 201, Lib. v., cap. xxviii., 19.

Whilst Celsus speaks of Elephantiasis as a disease almost unknown in Italy, later authors (1st and 2nd centuries after Chr.), Aretæus,† Archigenes,‡ Galenus,§ as well as Pliny, who preceded them, relate their own observations of the disease, many cases of which were, according to the latter, imported from Egypt and Asia Minor during the reigns of the first Emperors. In conformity with this, the descriptions given of it by the two authors first mentioned are more lengthy and exact than those of Celsus and Lucretius. And the physicians who came after Galenus (Oribazius, 360 after Chr.), Theod. Priscianus, Marcellus, Aëtius (541 after Chr.) speak of Elephantiasis Græcorum as a wide-spread and well-known disease. The authors quoted have not given any connected description of the disease. The names Elephantiasis, Vitiligo, Alphos, Leuke, Melas, already mentioned, occur repeatedly, the first of which are used to describe the tubercular, the latter, the spotted variety. The names Ophiasis, Alopecia, Satyriasis, Leontiasis, Morbus herculeus, Morbus phœnicicus, however, also occur, of which some, like the last, are used to indicate the disease *per se*, and others, like the first, only indicate its symptoms. From this time, the disease, which in the first two centuries after Christ was so rare in Italy and Greece, extended over nearly the whole of the European continent; lepra became the terror of all countries. Owing to their disgusting appearance and helplessness, and the incurableness of the complaint, and especially on account of its supposed contagious character, persons affected with the disease were confined in special establishments—leper-houses. The historical researches of Virchow (Archiv, B. xviii. und B. xx.) concerning leper-houses, have shown that such establishments existed in France as early as the 7th century (Verdun, Metz, Mastricht), and that, consequently, leprosy must even then have been a wide-spread disease. In the 8th century St. Othmar, in Germany, and St. Nicolaus, of Corbie, in France, founded leprosy-houses. Many such existed in Italy. Pipin (757), Charles the Great (789), forbade lepers to marry; in England canonical laws were made to the same purpose (Decret. Gregor.[*] The disease became most prevalent at the time of the crusades, since, from the end of the 11th century, for a period of two hundred years, whole nationalities were constantly wandering to and from the East, and thousands upon thousands, exposed to the precarious existence of a desultory warfare, suffered want and deprivation of every sort. In addition to this, those who were not actually engaged in war were afflicted with famine, and deprived of all the necessaries of life, because, in some places, whole districts were laid waste by the armies of the crusaders, whilst others remained uncultivated for want of labourers. This wide-spread destitution gave rise to all sorts of diseases; and though it may fairly be supposed that many of them had nothing to do with lepra, all were included in the same category, and, in proportion as the numbers of the diseased multiplied, the number of leper-houses increased. In France, alone, at the time of the decease of Louis VIII., there were 2,000 of them, and in all Christendom not less than 19,000. A special order became founded, the members of which undertook to nurse the leprous—the Order of St. Lazarus, whose Grand Master must himself be a leper.[†] For this reason, the disease was called Mal. di San Lazaro; in Germany it was known as Maltzey; in Holland, as Melaatsheid—names which here and there have been retained up to the present time.* Persons affected with the disease were called Melandriosi, Latrones, Ladres, Miselli,† Mézeaux, Malzige; the asylums, Misellaria, Mezelleries, Ladreries, Meladreries, Lazarethi.

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* Theodoricus, in Hensler vom abendl. Aussatze im Mittelalter, Hamburg 1790. Excerpt, p. 28. Among other things it is here stated: fricari enim, &c.

† (Eighty-one after Christ.) De causis et signis morbor, Leipzig 1735, p. 67.

‡ (Ninety-seven after Christ). In Aëtius iv., 130.

§ Galeni oper. Argentorat, 1604. De arte curandi, p. 983. De symptomat. differentiis, p. 663, especially in De symptom. causis, Lib. iii., p. 687, and also in many other passages. Egypt (Alexandria) is called the home of Elephantiasis.

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[*] Hensler, loc. cit., p. 211.

[†] Moehsen, de medicis equestri dignitate ornatis, p. 56.

According as the disease became more widely spread, a scientific investigation of its nature was more urgently called for. But the results of this investigation were marked by the peculiarities which characterised the state of medical science of that period. In the confusion which existed at the end of the Roman Empire, and the first centuries of the middle ages, the literature of the Greeks and Romans was either destroyed, or concealed in a few unknown or inaccessible places of refuge, such as the monasteries of that period. On the other hand, the Arabians; Serapion, called Janus Damascenus (Syria), Rhazes (Bagdad), Haly Abbas (Persia), Ebn Sina, or Ben Sina (Bucharest), Ebn Zoar (Ben Zoar, Even Zoar) (Morocco), Ebn Roschid and Abul Casem (in Moorish Spain), had published detailed works on Lepra, in which they partly reproduced the descriptions of the Greeks, more especially that of Galen, and partly recorded their own extensive observations. Thus, indirectly, by means of the Arabians, the western world was enabled to regain the knowledge possessed by the Greeks, and this was rendered especially desirable by the great prevalence of leprosy. Constantius, of Carthage, also called Constantinus Africanus, who died in 1087, and who taught in the school of Salerno, which had already existed since the 10th century, had not only seen the disease himself in his travels through the East, but had also adopted the theories of the Arabians, and as founder of the so-called Salernian school, he established the prevalent doctrine in regard to leprosy. From the end of the 10th until nearly the middle of the 14th century this served as a guide for most authors, such as Rogerius, Rolandus, Theodoricus, Wilhelm von Saliceto, Lanfrancus, Gordonius, Gilbert, Vitalis de Furno, Joh. de Gadesden, and others. After the example of the Arabians, and in order to conform to the theory of the four cardinal juices, most of them divided lepra into four varieties, Elephantina, Leonina, Alopecia, and Tyria; which were briefly defined by Constantius as follows:—Est autem quadrifaria. Vel enim de corruptione est sanguinis, et vocatur Alopecia; alia de Cholera rubea, et dicitur Leonina; alia de Cholera nigra et dicitur Elephantiasis; quarta de phlegmate provenit (quæ) Tyria (apellatur).* Besides this, all of them speak of Morphœa, and with Morphœa alba and Morphœa nigra some associate Morphœa lividi coloris† as a third variety. Morphœa‡ is made equivalent to the Albarras alba et nigra of the Arabians, and is used, to some extent, as a translation of the term Albarras. Many, however, think there is a difference in the meaning of the two words.§

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* De Melaatscheid, Door Dr. J. H. Vinkhuizen, S. Gravenhage 1868, 2 Taf., u. 1, Karte.

† Miselsucht, von Miser, Misellus. Virchow's Geschw., 2 B., p. 498.

In spite of the descriptions given by the Arabians and their followers, the authors of the Salernian school, being rather confused, the following may be regarded as the essential points contained in their works. True leprosy is described as Lepra (Arabum) or Elephantiasis. Nevertheless, Lepra is used as the generic term, and Elephantiasis, Leontina, Tyria, and Alopecia are only its varieties. It is characterised by the formation of red and livid spots,|| smaller and larger hard tubercles,¶ of a dark colour, insensitiveness of the skin,** shedding and whitening of the hairs, especially of the eyebrows, atrophy of the muscles,†† deformity of the limbs in consequence of contraction of the

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* Hensler, loc. cit., Excerpt, p. 23.

† Constant, Afric. by Hensler, E., p. 24.

‡ According to Hensler (loc. cit., p. 42), the name is first found in the translation of Haly Abbas by Stephanus, which dates from the 12th century. According to Virchow (loc. cit., p. 497), it exists in the pseudo-galenic book 'De dynamidiis' (Galeno adscripti libri, Ed. Froben. Basil.), pp. 25, 30, and in the 'Liber secretor,' ibid., p. 102.

§ Jan Damasc (Hensler, E., pp. 19 and 20), has, chapter iii., Albarras; chapter v., Morphœa.

|| Maculæ Theodoricus (Hensler, loc. cit., E., 31); Rubor (Gutta rosea Theodoric Guil. de Saliceto).

¶ "Nodi sentiunter in cute" (Theodoricus); "Tumores lapidei" of several authors; "Apostematum multitudo percipitur;" quæ quandoque magnitudinem nucis moschatae excedunt, quandoque grano fabæ assimilantur cum duritiæ notabili. ". . . Montagnana" (Hensler, E., 75).

** "Partium insensibilitas," Theodoricus Hensler, E., 31; "si pungatur posterior pars tibiæ et non sentitur," Lanfrancus (Hensler, E., p. 40).

†† "Consumptio musculorum et potissimum illius qui est inter pollicem et indicem," Gordonius, illium medecinæ (Hensler, E., 45).

joints*, gangrenous and ulcerative destruction of the phalanges, granular nodules on the mucous membrane of the mouth and pharynx†, hoarseness, destruction of the mucous membrane of the nose, and general marasmus. In addition to these, many other symptoms were enumerated, which do not in reality belong to lepra: Scabies, Impetigo, Serpigo,‡ Gutta rosea.§

When, in the course of the 14th century, the writings of the Greek and Roman authors were again brought to light, and began to be studied in the original, it became evident that the nomenclature of lepra was involved in great confusion. The dangerous constitutional disease under discussion was called Djudzam by the Arabians, an expression which is still in vogue among the Persians,|| and was translated by the word *Lepra*. It was now discovered that the lepra of Hippocrates and the Greeks was a simple scaly disease,¶ and that whilst they had undoubtedly described the disease called Djudzam by the Arabians (of which the translation is lepra), they had given it the name *Elephantiasis*.** On the other hand, the translators from the Arabian had already made use of the name Elephantiasis for another disease, which was called Dal-fil (elephant-foot) by the Arabians, and signified a local thickening of the limb, and, like the Djudzam, occurs endemically both in Egypt and Arabia.

There were, therefore:—

Lepra Arabum—Elephantiasis Græcorum, a dangerous, virulent, constitutional disease;

Elephantiasis Arabum, to which nothing analogous existed among the Greeks, and indicated only a hypertrophy of the skin;

And lastly, Lepra Græcorum (λεπραί of Hippocrates), which was the term applied to a scaly disease (Derdres, Dartres, Flechte).

To distinguish between these names, and the meanings attached to them, was not an easy or possible task for all authors.

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* "Spasmus et digitorum contractio," Const. Afric (Hensler, E., 25).

† Grana sub lingua. Gui. de Chauliac, 1585 (Hensler, E., 69).

‡ Serpigo of the Salernians corresponds to the Alunda of the Arabians (Lanfrancus, in Hensler, E., p. 37).

§ Theodoricus, in Hensler, E., p. 27.

|| Niebuhr Beschreib. von Arabien, Kopenhagen 1772. Polak, in Virchow's Archiv, B. xxvii.

¶ See *antea*, p. 119.

** Celsus, loc. cit.

On the contrary, they were often used indiscriminately, and this was not only the case in the 14th and 15th centuries, but happens frequently enough at the present time.[*] This may readily be comprehended, since Elephantiasis Arabum, Pachydermia (Fuchs), is endemic in the same places as leprosy;[†] both may exist in the same individual at the same time. Further, the scaly disease Lepra Græcorum (divided into Alphos, Melas, and Leuke) was considered equivalent to the Vitiligo (Alphos, Melas, and Leuke) of Celsus, and both of them were held to be synonymous with the Albarras of the Arabians, and the Morphœa of the Arabian translators.

Lastly, the difficulty in unravelling the confusion became, after a time, even greater, since, in the course of the 15th century, just as lepra began to diminish, the Lues venerea made its appearance. There was then a deficiency of material for observation, and authors had no other source of instruction than the bare and confused statements to be found in the literature of the subject. During the 16th century there was much discussion as to whether the new and ravaging disease, Syphilis, was not, in reality, merely the offspring—"a daughter" of leprosy. This view, which is still supported by a few[‡] at the present day, was advocated by many authors of that period,[§] whilst others argued strenuously against such a supposition.[||]

Towards the end of the 16th century, and in the course of the 17th, leprosy disappeared entirely from the existing civilised states of Europe, whilst syphilis had become universally established.

Those authors who, in the 17th century (Mercurialis[¶]) and

[*] Hecker, 'die Elephantiasis oder Lepra Arabica,' Lahr. 1858, gr. Fol., mit. 5 Taf., 'Elephantiasis or Lepra Arabica,' a title which is in itself utterly contradictory.

[†] Avenzoar, Lib. xiv., fen. 21, Tract. 1. Haly Abbas, Lib. iv., cap. 16. Pruner, 'die Krankheiten des Orientes,' Erlangen, 1847, p. 326.

[‡] Simon, F. A., in 'Handb. der spec. Path. u. Ther.,' v. Virchow, B. 2, pp. 422, 429, und dessen 'Kritische Geschichte der Syphilis, Tochter und wiederum Mutter des Aussatzes," Hamburg 1857.

[§] Seb. Aquilinianus, De Morbo Gallico, cap. 1 (Luisinus, Aphrodisiacus), Lugd. Batav. 1728, p. 3.

[||] Leonicenus, Brassavolus, Cataneus. u. A., in Luisin. Aphrodisiacus, 1728.

[¶] Mercurialis, 'De morb. cutaneis,' Venetiis 1601, p. 91, says, that Lepra may pass into Elephantiasis and the reverse.

in the 18th (Lorry*), wrote special treatises on diseases of the skin, and also Willan and Bateman,† at the end of the last century and the beginning of the present, had, from their own experience, but little to say concerning lepra, and were, consequently, compelled to limit themselves to a repetition of the confused accounts furnished by the earlier literature.

A further consequence of the want of personal observation was, that all sorts of rare, disfiguring, incurable, or exotic diseases were described as Lepra and Elephantiasis. The Barbadoes-leg (Eleph. Arabum) was regarded by some‡ as the true Elephantiasis, or described,§ even, as Elephantiasis tuberosa; and Scabies, Carcinoma, Ichthyosis hystrix, and Molluscum fibrosum were classed as lepra. Owing to the conflicting views, every one was quite at a loss to determine whether, and in what manner, certain diseases, supposed to be endemic, such as the Radesyge of Norway, the Morbus Dithmarsicus, the Sibbens of Scotland, the Falcadina of Istria, were connected with lepra.

Willan added still further to the confusion by referring again to the Lepra of Hippocrates in order to find a designation for the annular form of Psoriasis (Lepra Willani)—the impropriety of which has been pointed out by Hebra, and since then most authors have ceased to make use of the term in this way, though we still find it used occasionally for Psoriasis in England, as well as other countries.‖

The first step towards clearing up the difficulties in regard to lepra was made by Hensler, towards the end of the last century. It is true, he was by no means able to treat of the pathology of this disease in an exhaustive and circumstantial manner, because only a single case came under his personal observation, and owing to his having based his views on the statements of authors, he distinguished a western and an eastern lepra, as well as quite a number of sub-orders. But he studied the entire literature, from that of the Greeks down to his own time, so systematically and thoroughly that his work* has since served all subsequent authors as a guide in studying the old literature of lepra. The want of a description of the pathology of lepra based on personal observation was more keenly felt in the next ten years. Without such an aid it was found impossible to arrange a suitable terminology. For this reason, the accounts given of lepra by subsequent authors seemed still wanting in truthfulness and originality; the most confused of all is, perhaps, that of Alibert, who classes both Elephantiasis Arabum and Radesyge under the head of Lepra, and, indeed, designates the first as Tubercular Elephantiasis (El. tuberosa†).

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* 'De morbis cutaneis,' Parisiis 1777, p. 360.

† Prakt. Darst. d. Hautkr. nach Willan's System v. Thom. Bateman, 'aus der Engl. v. Hanemann,' Halle 1815, p. 426. Willan, however, calls attention to the frequency with which Eleph. Arabum was confounded with Eleph. Græcorum.

‡ Willan and Bateman, loc. cit.

§ Alibert, 'Monog. des dermatoses;' Rust, 'Helkologie,' Berlin 1842, p. 358.

‖ Er. Wilson, in 'Journal of Cutaneous Medicine,' ii., 8, 1869, p. 424; Veiel, 'Mittheilungen über die Behandlung chronischer Hautkr.,' Stuttgart 1826, p. 110.

It was reserved for Danielssen and Boeck to give a clear account of lepra. They were able to study the disease in their own country and make themselves familiar with its symptoms, as many cases of it occur in the endemic form in the neighbourhood of Bergen, in Norway, where it is called Spedalskhed.

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* Phil. Gabr. Hensler, 'vom abendländischen Aussatze im Mittelalter,' Hamburg 1790.

† Alibert, 'Description des Malad. de la Peau,' fol., 1814, p. 125.

1. Lepra Squamosa (planche xxx.) is of various sorts: Alphos, Leuke, Alopecia, Vitiligo, and Psoriasis.
2. Lepra crustacea (planche xxxi. = Lèpre crustacée syphilitique) (!).
3. Lepra tuberculosa, which, as L. tub. leontina (planches xxxii. and xxxiv.) is quite correct; but as lèpre éléphantine (!) (pl. xxxiii.) represents Barbadoes-leg.

In his monograph on the Dermatoses (translated into German by Daynac, 1837, ii., 167), the Dermatoses Leprosæ are classed as follows:—

1. Leuca (*a*), L. vulg. s. alba = Baras = Morphœa, Gilbert = Lepra (Aussatz) of the LXX.
    (*b*) L. radiata seu tyria = Ophiasis (according to the description, it is probably Ichthyosis).
2. Spiloplaxia (*a*) Spilopl. vulgaris = Malum mortuum.
    (*b*) Spilopl. scorbutica.
    (*c*) Spilopl. indica (this is the only form which corresponds to lepra in the mutilation and anæsthesia which it causes.)
3. Elephantia (*a*) Elephantia vulgaris (our Lepra).
    (*b*) Eleph. tuberosa (Barbadoes-leg).
    (*c*) Eleph. scrotalis.
4. Radesyge (*a*) Rades. vulgaris.
    (*b*) Rades. scabiosa.

Further, their extensive travels through the countries which form the shores of the Mediterranean, Asia Minor, and Egypt, enabled them to observe the endemic forms of those countries, and thus convince themselves that all forms of lepra present exactly the same symptoms as the affection called "Spedalskhed" in Norway, and hence are one and the same disease. These two learned authorities have given the results of their researches, for the most part, in three large volumes, which appeared in the years 1842,[*] 1848,[†] and 1862.[‡] The two last works are provided with beautifully executed plates, by Losting.

In the year 1852, Hebra made a journey of investigation to Norway, and the results of the observations which he there made on 219 cases of Spedalskhed are given, in an abridged form, in the 'Zeitschr. der k. k. Ges. d. Ærzte,' 1853, i. B., p. 60 et sequ. His terse description has contributed not a little to our acquaintance with lepra.

In the year 1859, Virchow accepted an invitation of the Scandinavian Government to study the etiology of Spedalskhed on the spot. Although the definite result looked for was not obtained, Virchow's journey was still of great importance in the way of spreading knowledge on the subject of lepra. An appeal,[§] made by Virchow to the physicians of all countries, was followed by numerous publications concerning lepra from all parts of the world; from Macnamara (Bengal), Lallemant (Brazil), Wucherer (Bahia), Domingo J. Novarro (Gran Canaria), Dr. Bolle[||] (Canary Islands), C. Wolff[¶] (Madeira), Oldekop[**] (Astrachan), Polak[††] (Persia), Hæntzsche[‡‡] (Persia), Friedel[§§] (Siam), Kessel[||||] (Portugal), Fritsch[¶¶] (Cape Colony), Langerhans* (Jerusalem). Meanwhile, and to some extent independently of the impulse given by Virchow, communications appeared from Prunert† and Griesinger,‡ in Egypt, and Rigler,§ in Constantinople, concerning cases which they had observed in the localities mentioned. The valuable essays of Kierulf,‖ Conradi,¶ Bidenkap,** and, lately, that of Armauer Hansen,†† have contributed much to our knowledge of lepra in the north. To these may be added Bergman's most useful recent work on this subject.‡‡ Carter§§ described the lepra of the East Indies, and Thomson‖‖ that of New Zealand, Drognat-Landré that of Surinam¶¶, and Profeta*** that of Palermo.

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[*] 'Om den Spedalske Sygdom, Elephantiasis Græcorum,' Bœck, Christiania 1842.

[†] 'Traité de la Spedalskhed,' par D. C. Danielssen et Wilhelm Bœck, Paris 1848, avec un Atlas, de 24 planches coloriées.

[‡] 'Samling af Jagttagelser, om hudens sygdomme, ved Bœck og Danielssen,' Christiania 1862, 3 Heft, 5 Tafeln.

[§] Virchow's Archiv, B. xviii. p. 161.

[||] The reports of all these writers in the 22nd B., Virchow's Archiv.

[¶] Virchow's Archiv, B. 26, p. 78, Taf. i.-iii.

[**] Ueber Lepra Caspica, ibid., p. 106, Taf. v. and vi., und B. 37, p. 195.

[††] Ibid., B. 27, p. 175.

[‡‡] Ibid., p. 180.

[§§] Ibid., p. 183, and in the 22nd B., China, Japan, and the Canary Islands, by the same.

[||||] Ibid., B. 32.

[¶¶] Ibid., B. 33, p. 160.

Although the authors who have written upon this subject do not all††† appear to have been equally familiar with the

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[*] Ibid., B. 50.

[†] 'Die Krankheiten des Orients,' Erlangen 1817, p. 164. Uber die knollige oder Gelenk-Lepra.

[‡] Virchow's Archiv, B. xvi., 1853, p. 256. 'Kleine Beiträge zur Pathologie des Aussatzes' (aus d. Klinik von Cairo); und Archiv, B. 5.

[§] 'Die Türkei und deren Bewohner,' Wien 1852, 2 B., p. 102.

[‖] Virchow's Archiv, B. 16, p. 13. 'Ueber die norweg. Spedalskhed,' und früher, Archiv, B. v.

[¶] Norsk Magazin for Lægevidenskaben, 1851, B. v., u. 1857, B. xi.

[**] Ibid., 1860, B. xiv., Bl. 535.

[††] 'Archiv für Dermat. und Syphilis,' 1871, 2 Heft, p. 194.

[‡‡] 'Die Lepra in Livland,' St. Petersburg 1870.

[§§] 'Transactions of Medic. and Phys. Society of Bombay,' 1862, new ser., No. viii., p. 1, plate 1.

[‖‖] Ngerengere and Tuwhenna v. Lepra Gangrenosa; 'British and Foreign Med.-Chirurg. Review,' April 1854.

[¶¶] 'De la contagion de la lèpre,' Paris 1869.

[***] 'Sulla Elephanziasi,' Palermo 1868, 2 Taf.

[†††] Thus, for example, Rigler himself committed the cardinal error of confounding Lepra Græcorum with Elephantiasis Græcorum, and of making them identical with Lepra Arabum. Oldekop's "Lepra Caspica" is so far peculiar, that it is said to differ from the "Lepra of Finland," especially in the fact that the cheesy contents of its tubercles become completely evacuated, and that the disease is said to be curable, as a rule. According to the description given by Martius ('De Lepra taurica,' Lipsiæ 1816. The same in German, 1819 'ueber die krimmische Krankheit'), there is reason to believe tubercular lepra exists in the Astrachan district. This is rendered all the more probable, because a "case of Lepra taurica," related by Bergson (Berlin 1853, Sep.-Abdr. aus Charité-Annalen, 4 Jahrg., i. Heft, 2 Taf.), confirms the statements of Martius, though he did not mention Martius, and his account is not by any means of a scientific character. Moreover,

matter in hand, they have nevertheless sufficiently shown that the characteristic symptoms and course of lepra everywhere correspond to those which the Scandinavian physicians have ascribed to Spedalskhed.[*] In this way, the original labours of Bœck and Danielssen, together with the co-operation of a great number of physicians and specialists, have established the fact that wherever lepra exists, at the present time, it always presents the same characters, and that the lepra of all countries is identical. It at once became evident that the differences found in some localities were only produced by the greater frequency or undue prominence of certain symptoms. In consequence of this discovery, all the names hitherto applied to the disease which are derived from its geographical position, such as "krimmsche Krankheit,"[†] "Rosa asturiensis,"[‡] &c., or are only met with in certain places, such as "Spedalskhed" in Norway, "Mal morto,"[§] "Morphœa," in Brazil, &c., must be given up, and one designation, founded on the history of the disease, and which may be understood by the physicians of all countries, must be substituted for them, once for all.

The word "Lepra"[‖] seems to us a suitable one, and we shall, for the future, make use of it to designate the disease now under discussion.

Although the symptomatology of lepra had now attained a scientific basis, a clear definition of the disease could never have been given, had not an effort been made to separate it from a whole series of affections which, in spite of the protests of many authors, were ever and anon surreptitiously placed in the same category. It was necessary to determine whether the statements

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the "one case of Lepra tuberculosa," by Dr. Heymann (Virchow's Archiv, B. 16, p. 176, Taf.), seems to be a case of Fibroma molluscum rather than of Lepra.

[*] 'Report on Leprosy by the College of Physicians, prepared for the Secretary of State for the Colonies,' 1867.

[†] Martius, loc. cit.

[‡] Hensler, loc. cit.

[§] Gadesden, Rosa Anglica, pract. medicina, Aug. Vindelic, 1595, 4, de Lepra, L. ii., c. 7.

[‖] Hence the name Lepra ("Aussatz") has the same significance as Lepra Arabum, and as Elephantiasis Græcorum of the correct authors. It has been adopted by the Vienna school, and harmonises with Virchow's suggestion. In England the equally appropriate name Leprosy has been in vogue for years.

generally received, especially towards the end of the last century, as to the existence of certain endemic forms of disease—Radesyge, Morbus Dithmarsicus, Jutland Syphiloid, Falcadina, the Sibbens of Scotland, and many others—were true or not; and if so, in what relation they stood to lepra. Till within a short time ago, they were constantly, and even now are, to some extent, classed with Lepra, Spedalskhed, Scorbutus, and Syphilis. According to the descriptions published concerning them, all these processes had in common, that in certain districts they were widely diffused, occurred very frequently, and had existed since time immemorial; that they manifested themselves by the production of tubercular, ulcerated, and serpiginous conditions of the skin and subcutaneous tissue, and more rarely by necrosis of the bones, chiefly those of the face (nose) and extremities.

In the study of lepra, the explanation given of Radesyge was of the greatest importance. The name Radesyge (from rada, bad, and syge, disease) is indigenous in certain parts of Norway, and was originally made use of to designate a disease having the characters already described, and which, according to v. See (1743) and Honoratus Bonnevie (1758), had existed in Norway since the beginning of the last century, though, according to others (Deegen, 1776), it was imported at an earlier date by way of Stavanger. The name Spedalskhed was likewise in vogue for the leprosy which had been indigenous in Norway since ancient times. In the course of time, however, the latter disease had so far diminished in frequency and extent, that it remained limited to the diocese of Bergen (between 60°–70° n. lat.). On the other hand, Radesyge remained indigenous in the neighbourhood of Egersund. Thus it happened that physicians who no longer had an opportunity of observing the disease (Spedalskhed) endemic around Bergen, though they knew of its existence, gave it the same name as the endemic disease with which they were familiar—Radesyge. In consequence of this, the physicians of the country gradually came to regard Radesyge and Spedalskhed as synonymous, or, rather, the meaning of the two names became equally obscure. In Scandinavia the efforts to obtain a clear idea concerning the nature of both diseases gave rise to an abundant literature.* But neither this nor the medical commissions which were repeatedly appointed (1771–1789) for the study of the disease led to the desired result so quickly as had been expected. Thus, in the last century, See, Bonnevie, Deegen, and Bang declared Radesyge to be Syphilis. Others looked upon it as Lepra (Mangor, 1770, Holst, 1817, and Sverensen, who, indeed, calls it Lepra norwegica). Others, again, regarded it as Scorbutus (Scorbut. Norvégien, Möller, 1784), or as a combination of Syphilis with Scorbutus (Cron), or of Spedalskhed, Syphilis, and Scorbutus (Steffens, 1771), or as a union of Syphilis, Spedalskhed, and other chronic skin diseases, such as the Sibbens of Scotland (Hans Munk, 1799 and 1815. Lastly, Hjort* completely separates Radesyge from Syphilis and Spedalskhed, and represents it as a morbus *sui generis*, under the name of Theria† (tuberculosa s. subcutanea).

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* See the literature given by Bœck, in 'Samling af Jagttagelser,' 3 Heft, p. 1 et seq., mit. Tafeln ix.-xiii.

Although Kierulf also regards Radesyge as a peculiar disease, different from Spedalskhed and Syphilis, it is nevertheless manifest from the very exact symptomatology which he gives of it‡, as well as from the existing descriptions and drawings, that when this disease has not been mistaken for Lepra, the name Radesyge has been applied to the affections which commonly result from hereditary and acquired Syphilis (gummous-syphilitic and lupoid processes), but also from scrofulous caries and necrosis, dermatitis chronica, ulcera e. varicibus, &c., having a chronic course, and occurring on the extremities, and there giving rise to an elephantoid condition.§ For these reasons we cannot agree with Bœck‖ in regarding Radesyge as an essentially syphilitic affection, nor with Virchow,¶ who looks upon the disease, in a certain number of these cases, as a morbus *sui generis*, but we unite with Hebra,** in asserting positively that it has no existence as a morbus *sui generis*. The same statements apply to Morbus Dithmarsicus, which, like Radesyge, was regarded by Struve*, and, after him, by every one else, as identical with, or as a mild sub-order of, Spedalskhed, and described by others as a Pseudo-syphilis, Syphiloid, complicated Syphilis (Fischer 1805, Helweg 1821, Huebener 1821, Dührsen 1832), and was positively asserted by Francke† to be syphilis. Radesyge, the Marsh disease, Falcadina‡ Scherlievo, Mal de Fiume, the Sibbens§ of Scotland, the Jutland Syphiloid of Deurs, the Esthonic Syphiloid,‖ the Lettic Syphiloid,¶ and a whole series of similar names for endemic diseases have been applied indiscriminately to all sorts of chronic affections of the skin which were not accurately diagnosed. Among these, hereditary Syphilis was the most common, but also Lupus serpiginosus, Scabies, Psoriasis, Elephantiasis Arabum, in short, all sorts of chronic syphilitic and non-syphilitic processes accompanied with inflammation, thickening, ulceration, and deformity of the extremities affected were included.** When these affections were correctly diagnosed, the basis of the supposed specific epidemic was taken away, and it was found that no such thing existed.

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* Norsk Magazin for Lægevidenskaben, 1840.

† Vide Celsus, loc. cit., L. V. C. xxviii., 3, p. 188. De Theriomate.

‡ Danske Ugeskrift for Læger, 1850.

§ See Elephant. Arabum, p. 146, vol. iii. of this work; and Lupus, p. 76 of present volume.

‖ loc. cit., p. 17.

¶ Geschw., ii. B., 534.

** Hebra says ('Zeitschr. d. k. k. Ges. d. Ærzte, 1853, i. B., p. 60), that with the exception of Elephantiasis Græcorum, he had not discovered any disease of the skin in Norway which he had not already seen as indigenous in Vienna.

Classification.

Although the nosological importance of lepra, wherever it exists, is in all essential particulars the same, nevertheless it does not present altogether the same appearances either in patients living in the same locality, or in countries remote from one another. That is to say, cases of it differ widely in regard to form, localisation, the organs or tissues affected, in the order, combination, duration, and intensity of the symptoms, and in the extent to which the system is affected. Sometimes only one symptom makes its appearance, and may for years constitute the sole indication of the disease. At another time several or all of the recognised phenomena are present. But even then the differences may be numerous, inasmuch as either the time of their appearance, the duration, or the severity of the individual symptoms, may give rise to variation, and many of them may remain of secondary importance, or be altogether absent.

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* 'Ueber die aussatzartige Krankheit Holsteins' ('On the Leprous Disease of Holstein'), there generally called the Marsh disease. Altona 1820, p. 44.

† 'Morbus Dithmarsicus,' Diss.-Inaugur., Kiliæ 1838, p. 22.

‡ 'Sigmund, Zeitschr. der k. k. Ges. d. Ærzte,' Wien 1853, i. B., p. 50 et seq. Pernhoffer, 'Untersuchungen und Erfahrungen ueber das Krankheitsübel Skérljevo,' Wien 1868.

§ Gilchrist, 'Edinb. Med. and Surg. Essays,' 1771. Carmichael, in Behrend's Syph., v. B., p. 90.

‖ 'Die gewöhnlichen Krankheiten des menschlichen Kœrpers,' von Ilisch, Dorpat 1822. Deurs und Döhrn, in Behrend's Syph., v. B.

¶ Bolschwing, Syphilis und Aussatz,' Dorpat 1839, ibid., iii. B., p. 66.

** The best illustration of the groundlessness of the objection sometimes raised, that in such cases the source of syphilis cannot be demonstrated, is given in Bergmann's article (loc. cit., pp. 3 and 4) where it is stated that in a certain district no case of primary syphilis had occurred for twenty years, though there was plenty of tertiary syphilis, the origin of which could be traced to the place having been occupied by military in the year 1832.

It is true that experience shows a greater correspondence between the different forms of the disease, the more one has an opportunity of observing a number of cases, and the longer they have been under observation. It cannot be denied, moreover, that certain *types* of the disease are produced by the comparatively more frequent occurrence of one or other set of symptoms, or by the striking development of some particular symptoms. We cannot, indeed, consider such types to be separate, or well-defined species of lepra, because, as we shall presently see, they often pass imperceptibly into one another, or combine together, and may be all met with at once on the same individual. Nevertheless, they occur so frequently in a typical manner that, in a practical point of view, it seems allowable to regard them as external diagnostic features of the form and course of the disease which may happen to exist. According to the particular views held by the observers, or according to the accidental circumstances under which the observations were made, sometimes one and sometimes another symptom was regarded as the most important, and made to serve as a basis for the classification of lepra. Thus Robinson* divided lepra into Lepra tuberculosa and Lepra anæsthetosa, because the production of tubercles and anæsthesia of the skin are really very striking and typically recurring signs of the disease. Since the appearance of their first work, Danielssen and Bœck have, up to the present time, adhered to the same classification, and speak of the tubercular and anæsthetic forms of lepra. This arrangement has been accepted by most authors. Bergmann also adheres to it in his work cited above. Pruner* speaks only of the Lepra tuberculosa s. articulorum, because he had evidently not seen or not recognised the anæsthetic form. For the same reason, Thompson, on the other hand, treats only of Lepra mutilans (Joint-evil, Town†) of New Zealand.‡

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* 'On Elephant.,' 'Med. Chir. Transact.,' 1819, vol. x.

Whilst the formation of tubercles in the skin and anæsthesia appeared of the most importance to some, others were most struck by the deformity of the joints, and others, again, by the formation of spots (anomalies of pigmentation). For this reason, Haubold speaks of a case of Lepra-Vitiligo.§ And Erasmus Wilson, besides describing the tubercular and anæsthetic forms of lepra, also speaks of Morphœa‖ as a peculiar variety, of which he makes four subdivisions: Morphœa alba lardacea, alba atrophica, nigra, and alopeciata. Lastly, Hansen, of Bergen, showed that anæsthesia of the skin occurred regularly in the tubercular form of leprosy, though only at a late stage of the disease,¶ and not merely in some cases, as Danielssen and Bœck believed, and, hence, he did not think it possible to draw an accurate line of demarcation between the two forms. Moreover, he considered the formation of spots just as typical as the eruption of tubercles, and, for this reason, he divides lepra into Lepra tuberculosa and L. maculosa. We so far agree with the latter view that we regard the maculated form to be of sufficient importance to give it an equal rank with the tubercular form, on account of its striking symptoms and frequent typical recurrence, and because anæsthesia occurs as frequently in the one

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[*] loc. cit., p. 164.

[†] "Diseases most frequent in the West Indies."

[‡] 'Brit. and Foreign Med. and Chirur. Review,' April 1854, p. 496, "Lepra gangrænosa," in which, however, anæsthesia is wanting. Although an error of observation may here have been made, it will presently be shown that mutilation may occur from leprosy without anæsthesia.

[§] Carolus Haubold, 'Vitiliginis leprosæ rarioris historia,' Diss.-Inaug., Lipsiæ 1821.

[‖] 'On Diseases of the Skin,' 6th edit., London 1867, p. 671, and 'Journal of Cutaneous Medicine,' London, ii., 6, 1868, p. 153.

[¶] 'Archiv f. Dermat. und Syphilis,' 1871, 2 Heft, p. 194. Hansen has shown, by careful investigation, that among 141 cases of tubercular Lepra, the sensibility of the skin only remained intact in 9, and they were only of a few years' duration. Bidenkap (Norsk Magazin f. Lægevidenskaben, xiv. B.) has made a similar observation.

as in the other. We cannot, however, ignore the anæsthetic form of lepra as an independent variety of the disease, because, in many cases, it undoubtedly manifests itself only by anæsthesia of the skin, without any other perceptible alteration of colour or volume.

We, therefore, recognise three types of lepra, which we shall designate, 1st, tubercular or tuberous; 2nd, spotted or maculated; and, 3, anæsthetic forms of lepra.

General Symptomatology.

The symptoms of lepra are partly general and partly local.

The first are of a rather indefinite character, and, for the most part, similar to those which are proper to other severe affections of the general organisation. Under certain circumstances, they may be met with in any of the different forms of lepra, and present no regularity as to course and duration. The local phenomena, on the contrary, are in themselves, as well as in their course and duration, of a specific nature, and hence they must be regarded as the essential and characteristic symptoms of lepra. They are generally met with on the skin,* in the form of spots, tubercles, blebs, and ulcers, of peculiar appearance, character, and course. Next in order of frequency they occur on the mucous membrane of the nose, mouth, pharynx and larynx—Lepra cutanea et Lepra mucosæ.

Or, they are met with in the regions supplied by the large subcutaneous nerves, or the fine peripheral nerves of the skin, where they give rise to disturbances in sensation and nutrition—Lepra nervorum.

In addition to these characteristic signs, there are a number of other variously localised symptoms which affect the most widely different organs and tissues, and contribute, more or less, to the characteristic form which the leprous disease assumes. The most important point, however, is the course of the process as a whole, that is, the sum of all the phenomena which belong to lepra, a consideration of which enables us to recognise the nosological significance of the individual symptoms of the disease.

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* For this reason it happens, that though lepra is a disease of the general organism, it is usually included in the domain of Dermatology.

Stadium Prodromorum.

The development of the symptoms characteristic of lepra, that is, their localisation in certain tissues and under certain forms, is preceded, as a rule, for a longer or shorter period, by appearances which are of so slightly characteristic a nature that they are only recognised as such where lepra occurs endemically, being otherwise misunderstood.

Persons so affected feel languid, depressed, both mentally and physically, incapable of enjoyment, are easily tired by physical or mental labour, suffer from excessive sleepiness and indolence. Slight shiverings, loss of appetite, nausea, belching, cardialgia, and gastricismus often occur; or such persons may even suffer every evening from attacks of feverishness.

An outbreak of blebs, representing a sort of Pemphigus, must also be reckoned as one of the prodromal symptoms, because the eruption may exist for months or years before the characteristic signs of lepra make their appearance. This variety of chronic bullous eruption is to be distinguished from the idiopathic form of Pemphigus, to a certain extent, by the fact that, as a rule, a single bulla or a few bullæ, only, will be present at one time, and new ones only appear after the old ones have become healed. The symptoms would be sufficient to cause any uninitiated person to diagnose Pemphigus. It is only those who are familiar with the disease, and who, at the same time, observe the eruption in places where leprosy is endemic, that are capable of recognising the bullous eruption just mentioned as a premonitory symptom of lepra.

Since, however, the formation of bullæ not only occurs occasionally as a prodromal symptom of lepra, but is also one of the symptoms most frequently met with in this disease, we shall have another opportunity of discussing the subject at length.

After this and other similar premonitory symptoms have lasted for months, or even many years, with varying intensity and with shorter or longer intervals, the real, unmistakeable symptoms of lepra make their appearance.

Sometimes, however, the premonitory symptoms mentioned are entirely wanting, or they are so slight and last only so short a time that they may be quite overlooked and seem to be absent, so that the characteristic symptoms of lepra appear to develop quite suddenly. The form which the lepra is about to assume cannot be determined beforehand by the character of the prodromal symptoms. The prodromal pemphigus eruption, however, renders it probable that an anæsthetic form of lepra will be developed, though this assumption is not always confirmed by the result.

Special Symptomatology.

1. Lepra Tuberosa (s. Nodosa s. Tuberculosa); Tubercular or Tuberous Leprosy.

A. *Symptoms presented by the Skin.*

After the prodromal symptoms mentioned have existed for years, months, or only a short time, or, in rare instances, have not been present at all, maculæ or tubercles, or both at the same time, make their appearance upon the skin.

a. *Maculæ.*

The maculæ rarely are small—of the size of the finger-nail; generally they are much more extensive—of the size of the palm of the hand or larger. They are tolerably well defined, but generally appear as if the margins had been washed or brushed out. At the commencement, they are of a pale, or dark- (bluish) red colour, and become paler under pressure, but, after a time, they assume a darker brown or yellowish-brown tint, or a shade of ash-grey.

The surface of the patch is smooth and glistening, as if oiled; rarely, and only transitorily, covered with fine scales. The patches are either quite level with the surface, or slightly elevated above it. When such a discoloured spot is grasped between the fingers it is evident that, besides the anomaly in tint, there is also a thickening and hardening of the skin. The fold is thicker than one pinched up from an adjoining normal portion of skin, it feels harder and is rather sensitive, or even painful, on pressure. The spots thus described as mere smooth, glistening discolorations, or as flat, more or less extensive, infiltrations and thickenings of the skin of a similar colour, are situated, for the most part, on the trunk, being abundant on the back, but are also met with on the buttocks; on the upper and lower extremities, chiefly on their extensor surfaces, and in the latter situation are sometimes symmetrically arranged; on the dorsal surfaces, palms and soles* of the hands and feet; also, in the beginning, to a less degree, upon the face.

During the early period of their existence, the patches undergo many alterations. At the outset, they are of varied but mostly of considerable size, though there are also some which are quite small, and only increase very gradually in size. Enlargement takes place by peripheral extension, and, at the same time, the centre acquires a shade of brownish-yellow or ash-grey, whilst the peripheral, younger portion appears somewhat prominent, and of a red or brownish-red colour. After a time, the centre may become quite pale, and remain as a glistening, white, smooth patch which, in comparison to the peripheral, coloured portion, is more or less depressed. A patch may even disappear entirely, inasmuch as it may cease to increase in area, whilst, subsequently, involution of the more recent, peripheral portions may occur. Or the patches undergo complete involution throughout their whole extent without having enlarged. The skin where they had been situated appears of its usual normal colour, or is remarkably glistening and white.

The involution of the patches of pigmentation takes place much more frequently and rapidly in the early stages of the disease than at a later period. And, whilst fresh portions of skin, or even those which were once affected but had recovered, continue to be attacked by the disease, the more recent patches enlarge progressively, with less and less tendency to involution, so that at last, having attained a large size, or coalesced over large tracts of the body, they at length become permanent. The persons affected acquire a piebald appearance, because the recent spots are of a brighter red hue, and the older have a darker colour, which may vary between brownish-red, yellowish-red, sæpia-brown, and blackish-grey, whilst here and there are portions of skin of a normal colour, or white patches which have remained after the involution of pre-existing spots. Years may elapse during which the disease is only manifested by the coming and going of the patches, and by the transformations referred to as observable in them.*

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* On the palm of the hand and the sole of the foot we have repeatedly seen, not only the flat, infiltrated patches, but, also, tubercular eruptions, as will be described later. Danielssen and Bœck, and also Bergmann, have not met with such.

b. *Tubercles.*

Changes of a much more important character than any of the phenomena mentioned make their appearance either in parts of skin hitherto unaffected, or on the already existing patches. The skin becomes more extensively infiltrated, partly in the form of broad, flat indurations, and partly in the form of prominent swellings, and firm, prominent tubercles. In the first place, some of the hard, brownish-red, sensitive infiltrations, causing thickening of the skin, and appearing in some places as an intensification of the patches, and in others undergoing involution, become permanent. They soon increase in volume, and give rise to slightly prominent, hard swellings, with a glistening surface. Then the infiltrations increase in number. They become more closely aggregated together, and, when situated on pre-existing, physiological folds of skin, the intervening lines and furrows become deeper, so that the latter, as well as the folds, appear more strongly marked. Extensive, superficial infiltrations of the skin become developed. The skin appears mapped out into irregularly-shaped patches, or diffusely discoloured of a brownish-red tint, and glistening, over a considerable extent, as if it had been painted over with tincture of iodine. If we pinch up such a discoloured portion of skin it feels hard and thick, and it seems as if there were a thin plate of gutta-percha inserted in the skin. Finally, more prominent, or altogether more distinctly limited infiltrations and swellings of the skin are developed, that is to say, *tubercles* are formed.

The tubercles are round or roundish, as large as shot, peas, or beans, or even attain the size of walnuts. They are generally of a brownish-red colour, rather sensitive to pressure, of a firm, elastic consistence, and either smooth and glistening on the surface, as if coated with varnish, or covered with a somewhat fissured epidermis. Small Telangiectases traverse their upper layers. A tubercle may be prominent and seated on a broad base, in such a manner that part of it is contained within a flat patch of infiltration, and represents a central thickening of the same. For this reason, such a tubercle has generally the same colour and oily, glistening appearance as the base on which it rests. Or, it attains a certain degree of prominence independently of the surrounding parts, and is sometimes attached to the skin by a short neck. Or, the tubercles become developed upon a portion of skin which was not previously discoloured or diffusely infiltrated, and they are, therefore, surrounded by healthy skin. Or, lastly, they are scarcely, if at all, elevated above the level of the skin, and thus form globular masses in and beneath the skin and subcutaneous tissue, and are very frequently situated within certain folds of skin. In consequence of their being covered by the epidermis and the upper layers of the skin, which are traversed by fine blood-vessels, they appear of a yellowish-red, transparent, somewhat gelatinous character. They are painful on pressure, and give to the touch the sensation of rounded masses, which extend deeply into the subcutaneous cellular tissue, and have the consistence of caoutchouc.

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* The phenomena just described are all regarded by Danielssen and Bœck as prodromal symptoms of the tubercular form of lepra.

As already indicated, the tubercles of lepra, when they form prominent tumours which have been added to the superficial infiltration, or, independently of these, have become developed on otherwise healthy skin, are disseminated and irregularly arranged, or they are crowded together in certain regions which they most frequently attack (as on the inner third of the eyebrows, extensor surfaces of the joints and extremities), and give rise to large, coarsely tuberculated, or even fungoid masses. In a single instance, in addition to flat, disseminated, and large, isolated, tuberous nodules, we also saw smaller tubercles of the size of pigeon-shot, or lentils, arranged upon the ears, palms of the hands, soles of the feet, and some other parts of the body, in groups and circles as large as sixpences or half-crowns. This single observation of the kind is especially worthy of mention, because, owing to the smallness and peculiar arrangement of the tubercles, the disease bore a deceptive resemblance to syphilis, and still more to lupus.

The tubercles are, as a rule, at first, and also throughout the course of the disease, met with in largest numbers on the face, which, in consequence of the presence and special localisation of the tubercles and co-existing, flat and elevated infiltrations, and the remarkable, glistening appearance and discoloration of its skin, acquires a peculiar, indeed, it may be said, a characteristic expression, which causes all persons affected with lepra of the face to resemble one another.

The face, as a whole, appears broader, fuller, tumid, and quadrilateral, of a brownish-red colour, or like burnt clay, and glistening as if oiled, or imperfectly glazed. The skin of the forehead is thickened, its furrows appear deeper, its folds more prominent. The folds are most prominent over the eyebrows, which are also usually occupied by darker red, elevated, round, glabrous tubercles. They are three to five or more in number, symmetrical, and arranged side by side, extending outwards, on both sides, from the inner extremities of the eyebrows, and arch over the eyes in the form of irregular, ridge-like masses, traversed by deep, vertical furrows, which give the countenance a morose expression (Facies leontina). The hairs of the eyebrows over the tubercles are scanty, or altogether wanting; at the outer extremity, however, a tuft of hairs remains. The transverse folds of the middle of the forehead are considerably developed, and, excepting their bronze-like hue and glossiness, they cause the brow to resemble that of a deep thinker or an aged person. The nose is thickened and covered with tubercles and protuberances, it is broad in front, and consequently looks as if flattened. The cheeks appear thick and pendulous, and they, as well as the upper eyelids, are here and there the seat of isolated, dark, brownish-red tubercles as large as beans, the weight of which presses the latter downwards, and half closes the eye. The eyelashes are scanty, the hair of the beard is thin and lanuginous, the lips are thick, tumid, glossy, pouting (giving an expression of "obstinacy"), hard, and feel knobby, the lower lip, more especially, is everted. The chin is broad, massive, tumid, and slightly uneven. The ears, especially at their circumference, are occupied by a few tubercles, or by flat, yellowish-brown infiltrations, in consequence of which they are glossy, stiff, thickened, and stand out from the head. The lobes of the ears are transformed into large, flat, pendulous, tuberculated, glistening folds, which are translucent, and of a yellowish-red colour. The pouting lips and the long puffy lobes to the ears give the countenance an expression similar to that of a mulatto. Some-

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times the tubercles are present in large numbers, more particularly on the nose and adjoining parts of the cheeks, closely crowded together, of moderate size, rounded or conical in shape, and of a bright red colour. If it were not for the large and characteristic folds which occupy the eyebrows, and which, under such circumstances, are scarcely ever wanting, one might readily mistake the disease for Acne rosacea.*

The infiltrations and tubercles are only rarely and scantily developed on the hairy scalp. On the other hand, they constantly appear on all other parts of the body, on the neck, shoulders, trunk, back, breast, abdomen, nates, skin of the genital organs, and, with especial frequency and in large numbers, on the extremities. On the latter, they are generally arranged symmetrically in clusters and groups, which are crowded together into tuberous masses, either grouped or disseminated, on the extensor surfaces of the elbows, on the wrists, backs of the hands, on some of the fingers, on the upper arm and forearm; upon the lower extremities they are especially numerous over the knee and leg.

In several cases of tubercular lepra, we have seen flat, brownish-red infiltrations on the palms of the hands and the soles of the feet, parts where nothing of the kind has been noticed by other observers, and in three cases (a five-year-old boy from Panama, a girl, 20 years of age, from the Mauritius, and a man from Cairo) we have also observed numerous tubercles in these situations.

Next to the face, the hands and feet present the most remarkable alterations. The hands are misshapen. In consequence of the œdema and diffuse thickening of the skin, the back of the hand is swollen out like a cushion, the skin is of a brownish-red or metal-grey colour, and slightly glossy; the epidermis is smooth, or marked by delicate fissures, and constantly throwing off fine branny scales as if it was too frequently washed with soap. The fingers are thickened, clubbed at their extremities, stiff, and separated from each other. The finger-nails are pale, opaque, dry, fissured, laminated, deformed, crumbling, cheesy, and, sometimes, reduced to short stumps. In consequence of this condition of the nails, the ends of the fingers are rendered unduly sensitive. The thickening, stiffness, hardness, and dryness of the skin, as well as the presence of tubercles over the joints and lateral surfaces of the fingers, render them less flexible, and cause a difficulty in grasping and handling objects, and the latter may also become impossible, owing to the painful sensations caused by pressure of any sort, and, therefore, by taking hold of anything with the hands. Similar alterations are met with on the feet. Walking becomes painful, often impossible, because the infiltrated, glistening, swollen skin of the soles of the feet is excessively sensitive. The consecutive œdema becomes more pronounced on the feet than on the hands, and spreads over the ankle and leg. In the course of time this chronic œdema always results in pachydermia —Elephantiasis Arabum. The lymphatic glands, especially of the groins, become transformed into hard, prominent, and painless tumours.

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* It may have been for this reason that the older authors regarded Gutta rosea (Acne rosacea) as Lepra (Hensler, loc. cit., p. 85; Theodoricus, bei Hensler, E., 27).

The symptoms are ultimately much modified by the changes which take place in the tubercles of the skin at a later period.

The individual tubercles vary in duration, but in one way or other they always, sooner or later, undergo involution. Tubercles which have become developed at an early period of the disease usually last but a short time. The later the stage of the disease, and the greater the number of tubercles developed, the more permanent do the latter become. Some tubercles may last for years without any essential alteration. Nevertheless, even these, under certain circumstances, eventually undergo destruction or involution.

Involution takes place in various ways.

(*a*) The tubercles atrophy, shrink, and become absorbed. Each tubercle becomes somewhat depressed, softer on the surface, and, at the same time, of a darker colour. The epidermis becomes wrinkled, splits up into laminæ, and desquamates. The diminution in size and the shrivelling progress from the upper surface towards the base, and, after days or weeks, the tubercle has disappeared. Its place is occupied by a roundish, slightly depressed patch of corresponding size, which is deeply pigmented, or white at the centre and of a dark brown colour at the periphery, and looks as if a dark brown pigment had been pressed into the skin by means of the end of the finger; the skin is somewhat thinned—atrophied. Sometimes such an atrophic spot forms the centre, around which a number of fresh tubercles spring up. The circinate arrangement, which we rarely meet with, is brought about in this way.

(*b*) Less frequently the tubercles soften and form abscesses. This softening may affect only their most superficial parts. The skin (and epidermis) covering them becomes thinned and gives way, a cheesy, purulent mass is discharged, and the aperture soon becomes closed. The rest of the tubercle, its basal portion, persists or undergoes absorption, or the whole of a tubercle becomes softened at the same time (Oldekop), and its contents are evacuated in the manner above described, a small cicatrix remaining. Or, lastly, several small collections of pus, resembling pustules, are formed at various parts of the tubercle, and, after these have burst, the remaining portion undergoes a retrograde metamorphosis.

(*c*) The tubercles ulcerate. This, for the most part, only affects the tubercles and flat infiltrations over the joints, particularly over the bony prominences of the foot, hand, and, more rarely, of the knee and elbow. Our experience quite coincides with Virchow's theory that this ulceration is generally the result of external mechanical influences—pressure, blows, friction—quite as much as of the inflammatory processes which are associated with the true leprous productions. The ulcerations generally take the form of simple excoriations of the tubercles or of the flat infiltrations. Sores are produced, which are of a roundish or irregular shape, but not always sharply defined, have a deep brownish-red colour and coarsely granulating surface. Their bases are hard, because formed by the tubercles or the infiltrations. The margins are usually flat; more rarely, and only when the sore has existed for a long time, they are callous and elevated. The ulcer secretes a small quantity of thin fluid, which dries into a scab. The surface of the sore is but slightly, though occasionally extremely, sensitive. The ulcers may exist for years, without extending in depth or circumference, or, on the other hand, they heal rather quickly under the simplest form of treatment, consisting in avoiding all external mechanical sources of injury.* Sometimes, when the ulcerated surface has existed for a long time, exuberant, fungoid, bleeding excrescences become developed. Not infrequently, when the sores have been long exposed to mechanical or therapeutical irritation, or if pus has collected under the scabs, lymphangitis and erysipelatous inflammation occur in the surrounding parts.

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* The opinion expressed by Danielssen and Bœck, and repeated by Bergmann, that the healing of leprous ulcers may be followed by dangerous

In rare cases, the ulcers extend deeply, in consequence of a rapid necrosis of the tissues. The margins then become extensively undermined, and the discoloured, gangrenous portions project from the surface of the sore. The reactionary inflammation, swelling, and infiltration are considerable, the necrosis advances more deeply to the tendinous and ligamentous apparatus of the joints, and to the bones. Lastly, the former become opened, and the parts affected separate. This is a sort of Lepra mutilans (Pruner, Lepra articulorum). The mutilation which occurs as the result of the events just described generally affects some of the fingers or toes, parts of the hand in general, as far as the wrist-joint, and of the foot as far as the ankle-joint. The elbow- and knee-joints are rarely, perhaps never, the seat of such destructive processes, and other portions of the body are still less liable to be so affected. After the necrosed portions have separated, healing takes place with comparative rapidity, and leaves an ordinary cicatrix. Sometimes the necrosis attacks the parts between certain joints, *e.g.*, the second phalanx, whilst the first and third remain intact. After a cure has been effected, the terminal phalanx is retracted to the first, and ligamentous union results. In a similar manner various degrees of deformity, distortion, abnormality of position, and limitations of mobility may be brought about.

B. *Symptoms presented by the Mucous Membrane.*

It is usually not till after the tuberous productions and infiltrations have existed on the skin for several years, that changes take place in the mucous membrane of the mouth, pharynx, larynx, nares, on the conjunctiva, and other parts of the eye, which, on account of their character, and owing to the fact that they often occur in conjunction with the changes

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symptoms, which may even threaten the life of the patient, and are only relieved by the reappearance of the sore, is not supported by our experience nor by any scientific data.

mentioned as affecting the skin, must be regarded as equivalent to the latter, that is to say, as belonging to the symptomatology of tubercular lepra.*

Tubercles which feel very hard to the touch, and are of a red colour, or covered by a greyish coating of epithelium, are met with on the mucous membrane of the cheek, velum, and arch of the hard palate, either disseminated or closely crowded together. From behind the upper incisor teeth, as far back as the velum pendulum palati, the hard palate is sometimes the seat of a broad-based, fissured plaque, the surface of which is somewhat granular, and covered with thickened, grey epithelium. This portion of mucous membrane often presents one or more large, isolated, hard tubercles, which are of the size of lentils, or beans, slightly prominent, of a red colour, and smooth on the surface. In consequence of the prominence of its papillæ, and the thickening and loss of transparency of its epithelial covering, the dorsal surface of the tongue acquires a peculiar appearance. At a later stage, the grey, epithelial coating accumulates, and forms thick masses, which are traversed by deep, longitudinal, and transverse fissures, and render the tongue thick, stiff, and less movable. At the same time, the thick, grey, epithelial coating, not only of the tongue, but also of the warty and papillary excrescences on the mucous membrane of the cheeks, lips, and hard palate, is constantly being thrown off and renewed. A spot which to-day is covered by a grey, opaque coating, presents to-morrow, after the epithelium has been thrown off, a dark-red appearance, and again, after a few days, looks as if it had been touched with nitrate of silver. The disease exactly resembles Psoriasis Mucosæ Oris syphilitica, which I have described more fully elsewhere,† only the form, manner of extension, and course of the individual plaques are here somewhat different. There are also papillary excrescences on the posterior wall of the pharynx, the remaining portion of the mucous membrane of which is abnormally dry, as if glazed, and covered, here and there, with a tough, adherent mucous. A mouth so affected emits a sickly, sweetish odour. The patients suffer from the fissures which every now and then occur in the hard, tuberculated masses, and find that the contact of warm saliva with the parts denuded of epithelium causes pain. The sense of taste does not undergo any alteration.

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* In the case of a girl, 20 years of age, born in the Isle of France, of a Scotch father and German mother, we had an opportunity of observing, for nearly two years, the affection of the mucous membrane about to be described, in the oro-pharyngeal cavity and larynx, in connexion with extensive tubercular, macular, and ulcerative leprous disease of the skin. The alterations there met with were exactly the same as those described by the well known older northern, as well as the more recent authors.

† 'Die Syphilis der Schleimhaut,' Erlangen 1866, pp. 86-95.

The epiglottis appears thickened, stiff, and immovable, in consequence of a similar rough, tuberculated infiltration of its mucous membrane. The mucous membrane investing the interior of the larynx, the true and false vocal cords, becomes affected in the same manner. The voice loses its resonance, is reduced to a whisper, or becomes shrill. From time to time attacks of coughing occur. The symptoms may exist for years without any noticeable alteration, except that the whole disease appears at times less severe. Ultimately, however, the individual tubercles and superficial infiltrations may soften, and undergo ulcerative disintegration, in consequence of which, part of the adjacent healthy tissue is also destroyed. In this way, the uvula and a great part of the velum may be eaten away by a shallow and slowly advancing ulceration, and distorted by the subsequent cicatrisation. This may also happen to the epiglottis and the different structures of the larynx. In the latter case the voice and respiration will be more or less impaired according to the position and extent of the ulcerations, and the amount of cicatricial contraction.* On the whole, ulceration is rare, and is neither so extensive, deep (not attacking bones and cartilages), nor so rapid as in syphilis.

The mucous membrane of the nose becomes, as a rule, affected simultaneously with an eruption of tubercles on the skin of the alæ nasi, but it may be attacked quite independently. Firmly adherent scabs form on the septum and the inner surfaces of the alæ. Fissures frequently occur from which a sanious fluid is secreted. This becomes dried up, and causes a renewal of the scab. After the latter has been thrown off, the mucous membrane appears irregularly excoriated, and bleeds easily. There is nothing particularly characteristic about this affection. Nevertheless, the raw spots correspond to excoriated tubercles. The disease may continue in this mild form for years. At last, disintegration of the infiltrations, and destruction of the cartilage, take place here also. As a rule, the perforation is quite limited. Occasionally, though very rarely, the cartilaginous and cutaneous septum becomes entirely destroyed, and the end of the nose sinks down towards the lip, the nose appears flattened.

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* Such affections were not unknown to the older authors, but, of course, only in so far as they affected the voice, and parts of the mucous membrane easily seen. According to the pathological investigations of Danielssen and Bœck, the formation of tubercles may extend over the mucous membrane of the trachea and larger bronchi (loc. cit., p. 221, Atlas, pl. i. b, pl. v. b, c, pl. xi.). Virchow has described the formation of deep-seated callosities and consecutive stenosis of the larynx (Geschw., loc. cit., p. 520). So, also, Heymann (Einiges über die Lepra wie sie auf Java und den Molukken vorkömmt. Inaug.-Diss., Würzburg 1854, p. 18); and Wilks ('Guy's Hosp. Rep.,' ser. iii., vol. v., p. 154).

Inflammatory and catarrhal conditions of the conjunctiva palpebræ et bulbi, with an abundant secretion of mucous and tears, and the development of granular excrescences occur, independently of any formation of tubercles in the skin of the lids. A vascular patch, such as occurs in conjunctivitis pustulosa, is formed on the scleral conjunctiva; it is triangular, with the apex directed towards the limbus corneæ. At the apex of the triangle just mentioned, a round, greyish-white prominence, as large as a millet-seed, makes its appearance; this soon extends for some distance around the corneal margin, and, after a time, on to its surface. In this way the cornea may become partly, or even entirely, covered by a slightly uneven, firm, fibrous mass, into the substance of which the conjunctival vessels are continued—Pannus crassus, Pannus leprosus—and vision becomes mechanically impaired to a greater or less degree. Ulceration of the cornea also occurs, not only in the situation of the latter, as a result of its disintegration, but also on parts free from the outgrowth. Perforation of the cornea, prolapsus iridis, and anterior synechiæ follow. The growth may also penetrate the cornea and impinge upon the iris. In addition to this, tubercles may become developed, independently, in the iris, intrude upon the posterior chamber, give rise to posterior synechiæ, close the pupil, cover the anterior capsule, and, by growing through the pupillary aperture, and from the front of the iris into the anterior chamber, they may unite with the growth which is extending inwards from the cornea. In other cases the local process begins with a diffuse cloudiness of the iris, iridocyclitis (Hansen). A partial or complete loss of vision, sometimes accelerated by an attack of acute panophthalmitis, is the result of these alterations.

Many variations occur in the phenomena just described as characteristic of tubercular lepra, so that any given case may be marked by certain peculiarities, but there is also a whole series of associated symptoms, partly general and partly local, to be borne in mind, which, by their combination with the former, essentially modify the course of the disease.

There are two well-pronounced forms of the disease. In very rare cases the course of the disease is *acute*, but in by far the greater number it is of a *chronic* character.

a. *The Acute Form.*

After the prodromal symptoms have existed for a shorter or longer time, or, without such, the eruption of tubercles and superficial infiltrations of the skin and mucous membrane, already described, makes its appearance in connexion with febrile symptoms, of a continued or remittent character. If the fever, which may even assume a typhoid character, persists, the eruption of fresh tubercles, and processes leading to softening and disintegration of the old ones, with destruction of the surrounding tissue, follow each other in rapid succession. The disease may then have progressed in the course of a few months to an extent which otherwise would only have resulted after the lapse of many years.

The severity of the affection may again diminish, and its subsequent course become more mild; or the acute symptoms are continued. Affections of the internal organs are superadded to the local infiltrations and ulcerations visible externally; brain mischief, colliquative diarrhœa, exudative processes (pneumonia, pleuritis, &c.), when associated with the general exhaustion which results from the attacks of shivering and of fever, may lead to a fatal termination within an astonishingly short space of time. Such an acute course, though so rarely observed at the outset of the disease, almost constantly occurs towards the end, in tubercular lepra, after it has existed for years in a chronic form.

b. *The Chronic Form.*

The chronic form may also present many variations.

1. As a rule, the evolution and involution of the superficial and tubercular infiltrations of the skin, as well as the other pathological changes in the tissues, are very slow in their progress. The process lasts for many years, during which time the local affections may become greatly increased, both in extent and severity. The progress of the chronic form, however, at least in its later stages, is by no means uniform. The eruption of new (and the involution of old) tubercles takes place at intervals (schubweise). The group of symptoms which occurred at the outset is frequently repeated in the course of the disease. Patients are often troubled for several days with general malaise, languor, indigestion, pains in the joints and bones, which are sometimes worse at night, and febrile exacerbations towards evening; a fresh outbreak of tubercles takes place, and then the general symptoms again abate. In other cases, on the contrary, after this febrile excitement has lasted for several days, instead of a fresh outbreak, a rapid involution and softening of a large number of tubercles may be observed. Lastly, both events, that is, the simultaneous, acute softening of many tubercles and infiltrations, and the acute or subacute eruption of new ones, may take place within a few days of each other, during and after an attack of fever.*

In the intervals between the febrile exacerbations, which intervals may last for weeks or months, the patients are tolerably comfortable. The state of nutrition and of the mental faculties may be perfectly satisfactory. During such intervals, it is true, the process still continues to advance, though imperceptibly, and without causing any constitutional disturbance. The only troublesome or annoying symptoms present are caused by local affections. After some years, however, the eruption of tubercles becomes more extensive, and, in proportion as larger tracts of skin are occupied by them, there is a greater tendency to the establishment of ulcerative and destructive processes such as we have already described, and the whole organisation becomes more visibly impaired. The languor, loss of appetite, and listlessness become permanent; the eyes are dull and staring; the expression of the countenance is sad and desponding. Such patients lie for hours and days without taking any interest in their surroundings, and withdraw themselves from all society; the strength diminishes, nutrition becomes impaired, and the patient dies in a state of marasmus. Or, the fatal termination is fortunately accelerated by the occurrence of tuberculosis of the lungs, colliquative diarrhœa, albuminuria, or some other acute complication. Or, an acute eruption of tubercles attended with fever, and presenting the characters already described, terminates this ever varying history of suffering.

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* In reference to the febrile excitation, and the general and local events which accompany it, we cannot accept the ontological views held by Danielssen and Bœck, since, according to the present state of science, they are wholly inadmissible. We are, on the contrary, of opinion that the fever has, sometimes, the same significance as that which accompanies the eruption of variola or roseola syphilitica, and is sometimes, as Hansen, also, believes, the expression of a metastatic process. In those cases where many tubercles soften simultaneously, there is an evident cause for the absorption of material undergoing decomposition, and for the febrile reaction, and a renewed outbreak of the process may occur on the surface (Metastasirung nach aussen)

In this manner, that is, in such a way that the tubercular form of lepra maintains its character to the end, the disease terminates, as a rule, within the comparatively short period of 8–9 years.

2. After tubercular lepra has existed for several years under the form described, a new and additional symptom, anæsthesia of the skin, makes its appearance, and the type of the disease may now gradually become so changed that, after some time, the symptoms belonging to the anæsthetic form may predominate over, or even replace, those of the tubercular variety.

The occurrence of anæsthesia in tubercular lepra, according to the experience of the last few years, is by no means to be regarded as the turning-point in the typical course of the disease, as was formerly stated by Danielssen and Bœck to be

—that is, the simultaneous softening of some tubercles and the development of others; or metastasis to internal organs may occur, as has been shown by appearances found after death; or elimination may take place by means of other well-known processes (excretion). Since, however, lepra presents the characters of a constitutional disease, we are justified in regarding the febrile excitement of the first stage as due to some toxic influence. At all events, the febrile excitement would appear, according to this view, to have, at one time, the same significance as that of variola, whilst, at another, it is similar to that which accompanies the metastasis of cancer, &c.

(maculæ) make their appearance upon the skin, usually of the face and extremities, but also scattered over the trunk, upon the palms of the hands, and soles of the feet. They appear without any accompanying symptoms, so that patients only become aware of their presence at a later period, when the face or hands are affected, or when, as is usually the case, at last they become painful. In many instances, however, they are associated during their development and progress with general symptoms, such as pains in the joints and bones, feverishness towards evening, gastricismus, loss of appetite, faulty nutrition, &c.

The spots vary in colour, form, and appearance. Sometimes they are merely reddish, almost invisible discolorations, varying from the size of a half-crown to that of the palm, or pale-red or bright-red patches, which become temporarily white under pressure. In other cases they are, from the outset, yellow, dark brown, almost black, or ash-grey pigmentations; or they appear as white, glistening, non-pigmented spots. The portions of skin so discoloured are either smooth and glistening, or the surface is covered with a fine, branny desquamation. They are either quite flat or slightly raised above the surface, sometimes attaining the height of several lines, especially at the margins. At the same time, the skin of such parts is dry, and does not perspire even when that which has remained unaffected is acting freely.

These are the varieties which, according to the colour of the spots and the appearance of the discoloured skin, have been designated as Morphœa of different kinds, Morphœa rubra, alba lardacea, atrophica nigra; as Vitiligo, Leuke, and Melas (Celsus), Vitiligo gravior.

Course of the Disease.

The several forms of this spotted or pigment-lepra may exist alone for years as the chief signs of the disease, and constitute two different types.

Thus, for instance (a) they may exist as such for years, or even terminate as such without ever undergoing any further

of cases the spots are the chief, if not almost the only symptom of the disease.

alteration. To a certain extent they represent local forms of lepra, since during their entire period of existence, as well as after they have passed away, the system does not become in the least affected by them. Or (b) they may last for a long time uncomplicated; but, sooner or later, the whole system becomes affected, and the series of symptoms characteristic of anæsthetic lepra make their appearance, among which the symptoms of maculated lepra only occupy a subordinate place.

(a) The pigment-lepra, which has been called *Morphœa*, makes its appearance under various forms. Sometimes it is represented by a single pigmented spot, for example, on the face or thorax. The patch is as large as a sixpence, of a pale-red colour, sharply defined, with somewhat prominent bright red or livid-red margins. The sensibility of the entire patch is increased, it is subject to spontaneous itching, pricking sensations, as if from needles, and is painful when touched or pressed—*Morphœa rubra*. In the course of months or years, the prominent margin advances further, whilst the centre becomes paler, and, finally, of a brilliant white colour—*Morphœa alba*. At the same time, the hair of the part affected becomes white, scanty, and lanuginous. The skin of the white central portion may remain smooth and pliable, or it becomes slightly depressed and atrophic—*Morphœa atrophica*. The atrophy occurs either uniformly or in a punctate manner, so that the patch presents a number of shallow, glistening white pits, like shallow small-pox scars. Or, on the other hand, the centre is of a yellowish-brown colour, the skin being smooth, or of a cicatrix-like, atrophic character. At the same time, the portion of skin thus altered, and circumscribed by a prominent red margin, may have lost its hyperæsthesia and recovered its normal sensibility, or it may become temporarily or permanently anæsthetic. Lastly, by the peripheral advance of the margins in the manner described, a large tract of skin becomes involved, which, for example, may include half the thorax. The diseased part is surrounded by a somewhat prominent border about 1 or 1½‴ in width, and of a pink or violet colour, which, towards the centre, gives place to a yellowish-brown tint. The central portion is generally white, uniformly atrophic and depressed, or marked by numerous atrophic, punctiform indentations like small-pox scars. The process may exist under this form for many years, during which time the peculiar rainbow-like discoloration of the margin is constantly present. The person affected enjoys perfect health in other respects. The disease, at length, comes to a standstill, owing to the red margin ceasing to advance, and becoming flattened. The skin in this situation likewise atrophies, and assumes a pale or brownish hue, remaining, at the same time, either normally sensitive or anæsthetic. In this way a permanent cure may result. In other cases, however, one or more morphœa-centres, of a similar character, may become developed on other portions of the body, either simultaneously with such a circle, or after it has passed through all its stages.*

Morphœa alba may also originate in the form of a patch as large as a sixpence, a half-crown, or the palm of the hand, the margin of which is sharply defined, or as if washed out, and the skin over it is of an intense white colour, smooth and glistening, like bacon or alabaster. The patch is somewhat elevated, and gives a sensation of stiffness both to sight and touch, as if the skin was infiltrated by a firm, white substance (" looking like an infiltrated white material," Er. Wilson, loc. cit., p. 155)—*Morphœa lardacea.* The patch is at first hyperæsthetic, at a later period it becomes somewhat depressed and anæsthetic, and may spread in the manner described.

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* As examples of this form, we can quote two cases.

Upon the right half of the thorax of a boy 12 years of age, living in Vienna, there was an oval patch as large as the hand, which had existed two years, and was surrounded by a prominent, violet-red border, a line and a half in breadth: the skin at its centre appeared partly of a glistening white colour, like a thin scar caused by a scald, and partly atrophic, like the scars of small-pox.

A man from Russian Poland, about 40 years of age, who came under Prof. Hebra's care as a private patient on account of sycosis, presented exactly similar circles on the trunk and pubic region. They had existed for seven years, and extended over large tracts of skin. An arch extended from the inner surface of one thigh, across the pubic region, to the inner surface of the other. A circle extended from the middle of the shoulder towards the vertebral column, and from thence across the hip, and upwards over the abdomen and anterior surface of the thorax back to the shoulder. In addition to these, there were also several smaller circles.

In both cases, there was hyperæsthesia of the margins, whilst the sensibility of the atrophic skin at the centre was only slightly diminished. The general health of the patients was perfectly good.

Er. Wilson gives an account of twenty-five similar cases ('Journal of Cutaneous Medicine,' loc. cit.).

Morphœa nigra appears in the form of patches, which look like an unequal distribution of cutaneous pigment. Circumscribed, sæpia-brown, or ash-grey, or even blackish-brown streaks, blotches, and discoid patches, which spread from their margins, become developed. The centre soon becomes white, and an annular appearance is produced. In such cases, also, the dark-red margin is usually prominent, or the centre remains of a brown colour, and, after several such patches have become united in consequence of their peripheral extension, large, dark discolorations are produced, which occupy whole regions of the body. In other cases, the pigmentation takes place irregularly in the form of dots and stripes, being associated, at the same time, with an equally irregular atrophy of pigment. White, non-pigmented spots make their appearance, whilst immediately around each white point there is a collection of pigment. The latter accumulates more particularly around the follicles of the skin, the inter-follicular spaces appearing of a glossy white. Those parts of the skin in which the follicles abound, such as that on the extremities, appear delicately variegated with brown and white markings. After a time, however, the brown pigmentation again predominates on the regions just mentioned, as well as on other parts, such as the face and trunk. The white patches also again become brown, and, at last, after an abundance of pigment has been repeatedly developed and reabsorbed, there remains only a few irregular non-pigmented spots, the skin of nearly the entire body becoming discoloured in the form of large patches, which present different shades of brown and greyish-brown—*Vitiligo leuke et melas* (*Celsus*); *Vitiligo gravior.* Years elapse before the pigmentation becomes so general.

(b) In many cases, meanwhile, symptoms become developed which may be regarded as premonitory of the anæsthetic form; they are hyperæsthesia, or anæsthesia of the skin, muscular atrophy, dry gangrene, and general marasmus. The macular form may thus become complicated with the symptoms of anæsthetic lepra, precisely in the same manner as we have described when speaking of the tubercular form. The symptoms belonging to anæsthetic lepra thus come to predominate and remain, for the future, the chief features of the disease.

III.—LEPRA ANÆSTHETICA—ANÆSTHETIC FORM OF LEPRA.

This form may become developed in such a way that the group of symptoms we are about to describe are superadded to those of the pre-existing macular or tubercular lepra, and, in the further course of development, gradually come to predominate over them. Accordingly, we meet with cases of the disease in which, for a long period (for many years), that is, to the end of life, all the phenomena characteristic of lepra may be seen at the same time; or, on the other hand, the anæsthetic form may become developed as such from the outset. In the latter case, in addition to the common prodromal phenomena, certain changes, similar to those which have been described when speaking of the other two forms, take place in the skin prior to the development of the characteristic symptoms; or the symptoms of anæsthetic lepra become manifested in skin which has not previously suffered the least morbid alteration.

Symptoms and Course.

After a prodromal stage of longer or shorter duration, the peculiarities of which have already been discussed, and from which it is impossible to form any opinion as to whether the tubercular or the anæsthetic form of lepra is about to become developed, there appear:

1. *Bullæ.*—These spring up so rapidly that they are generally met with in a mature condition, or they may make their appearance upon an acutely inflamed, prominent (urticaria-like) patch. Sometimes each outbreak is preceded by fever and a feeling of illness for several days. In no case do more than a few isolated bullæ appear, sometimes only a single one. They vary in size from a lentil to a bean, are full and tense, and are sometimes met with even as large as the palm of the hand. There is no perceptible difference between this eruption and that of Pemphigus vulgaris*—Pemphigus Leprosus. Each bulla lasts from a few hours to several days. It may burst, discharge its contents, and dry up, desquamation of the epidermis following,

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* Schilling, 'de Lepra Comment.,' Ludg. Batav. 1770, compares the bullæ to those caused by intense heat ("sub adustionis specie latens").

and leaving either a dark pigmentation or, more frequently, a permanently white, non-pigmented spot,* or the bulla is destroyed by some mechanical injury, and the rete is exposed as a yellowish-white, gelatinous, swollen mass, after the disappearance of which, by a process of ulceration, the red papillary layer becomes exposed, and, finally, heals over by granulation. The spot then remains as a permanently glistening-white cicatrix. On such spots,† the hair also becomes white, and some of it falls off.

The bullæ occasionally become enlarged by peripheral extension. Whilst, in the centre, a scab is formed, a ring of bullæ develops at the circumference. Thus, an appearance similar to that of rupia is produced. In such cases, moreover, there is a good deal of inflammation of the surrounding parts, which become swollen and prominent, so as to form a sort of barrier around the central scab. Necrosis of the skin upon which the bullæ are formed takes place, or a dry incrustation is formed, or an ill-looking, steep-margined ulcer, which cleans slowly, and, at last, heals, leaving a thick, smooth, or uneven cicatrix.

The periodical eruption of bullæ may continue for years without any other recognisable symptom of lepra becoming manifested.‡ The patient may, with the exception of a few intercurrent symptoms of a general character, fever, rheumatic pains, &c., feel perfectly well, and present a blooming appearance. In the course of time, a new and characteristic symptom of lepra makes its appearance—*anæsthesia* of the skin. At first the white spots left by the healing of the bullæ retain the normal degree of sensibility. But, in proportion to the duration of the disease, we find a greater or less number of them have become anæsthetic, and, even during the first eruption, each, or one here and there, of the spots, previously the seat of bullæ, may undergo this change. The formation of bullæ does not cease with the occurrence of anæsthesia. Fresh crops of them appear at a later period, with accompanying febrile symptoms, not only on parts of skin which are hitherto not anæsthetic, but also on those parts where sensation has already been lost.* The eruption of bullæ often occurs also in the course of tubercular lepra without the characteristic symptoms of the anæsthetic form necessarily becoming developed. When, however, the pemphigus eruption makes its appearance at the outset, after prodromal symptoms of a general character, experience has shown that an eruption of tubercles seldom occurs, but that the symptoms of anæsthetic lepra supervene.

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* Bergmann (loc. cit., 64) is disposed to regard all, or nearly all, the white patches, and especially those which resemble atrophic or cicatricial spots, as due to pre-existing bullæ. We have shown (Lepra maculosa, p. 154) that such patches may also have another source of origin.

† The turning grey of the hair in lepra, upon which so much stress was laid, in the old literature, as a symptom of lepra, is so rare and unimportant an event, that, when contrasted, on the one hand, with the constancy and remarkable extent to which the same thing takes place in vitiligo (Leucopathia, p. 177, vol. iii.), and, on the other, with the remaining very striking signs of lepra, it quite sinks into insignificance.

‡ For this reason, Danielssen and Bœck have, in their first work (1848, loc. cit., p. 264), spoken of Pemphigus as a prodromal symptom of anæsthetic lepra.

2. *Maculæ.*—These appear upon the face, trunk, and extremities as patches of redness, or pigmentation, which are either sharply defined, or else look as if washed out at the margins, and present the same peculiarities in regard to their nature and course as have already been mentioned in describing the different varieties of Morphœa. The appearance of such spots must not be looked upon as positively indicating the commencement of anæsthetic lepra, since it not infrequently happens that they represent an independent form of the disease, which may run its course and terminate without the supervention of any anæsthetic symptoms. If, however, the discoloration becomes very extensive (Vitiligo nigra et alba) the anæsthetic form generally becomes developed also.

3. *Hyperæsthesia Cutanea.*—Patients experience excessive pain from the slightest touch or the least pressure, not only on the patches of discoloration, but also on parts of skin which are, otherwise, apparently normal. There is hyperæsthesia of the skin. The hyperæsthesia is sometimes limited to certain

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* Just as Danielssen and Bœck, in their work of 1848, loc. cit., have taken too narrow a view of the subject, when they reckoned the bullous eruption as a prodromal symptom of lepra, their contrary statement made at a later period: "Lors de l'apparition de l'anæsthésie de la peau, mais seulement alors, il arrive assez fréquemment que dans quelque endroit ou la sensibilité de la peau est considérablement diminuée, ou complètement éteinte, il se montre un pemphigus" (Jagttagelser, 1862, 3ème livr., fol. 3) —would appear to be going too far.

regions of the skin, and remains unaltered for years, causing no annoyance whatever, unless it happens to be inconveniently situated. In other cases the hyperæsthesia affects many portions of the skin, or even the whole cutaneous surface. The face, in such cases, is expressive of extreme suffering. The patients lie in bed moody and incapable of exertion, because they find walking painful or impossible, and painful sensations of all sorts, such as burning and pricking, or reflex actions, such as cramps and convulsive movements of the whole body, are caused by grasping and handling objects. They even require to be fed, because they are not able to grasp the knife and fork, glass, &c., in order to carry them to the mouth. At this period, also, certain subcutaneous nerves, such as the ulnar (between the internal condyle of the humerus and the olecranon), the median, radial, and musculo-spiral, the cervical plexus, the tibialis, peroneus, &c., may be felt to be uniformly or irregularly thickened, and are extremely sensitive when pressed upon. At a later period they complain of formication and frequent attacks of numbness of the extremities, and are liable to wake up suddenly in a state of fright, because the pressure of the bed mattress upon certain nerve-trunks frequently produces these nervous sensations in an intense degree.

This condition may also last for several years without seriously impairing the nutrition of the patient. Eventually, however, the hyperæsthesia diminishes, in every respect, and there is a temporary improvement; but this diminution in the hyperæsthesia is only premonitory of a physical and mental indolence, the first symptom of which soon becomes manifest in the occurrence of anæsthesia.

4. *Anæsthesia Cutanea.*—We have already mentioned the fact that tubercular lepra is very frequently, and often for a long time, associated with anæsthesia. This symptom, however, either never becomes the most prominent, or only does so after the type of disease has undergone an entire transformation. In the same way anæsthesia, more or less pronounced, forms one of the symptoms of circumscribed or localised Morphœa. But in these cases, also, in comparison to the other symptoms which the skin presents, it is of secondary importance, because often absent, or the sensitiveness of the skin is but slightly diminished. In the cases under discussion, however, this symptom is of a prominent character.

Anæsthesia becomes developed, as a rule, in a portion of skin which was previously hyperæsthetic,* or upon a part which either is, or was, the seat of an abnormal pigmentation. Sometimes it makes its appearance after the usual prodromal symptoms, or, in the absence of such, it occurs in a portion of the integument which has hitherto presented nothing abnormal either in regard to colour or appearance, so that the persons affected are quite unaware of its existence; such spots only being discovered by a careful examination with a needle. The external appearance of the paralysed portion of skin does not become changed until a later period, when it undergoes a process of atrophy, which also involves the subjacent tissues. The parts most commonly affected by the anæsthesia are the white patches, parts, therefore, which have previously been the seat of red or black Morphœa, or of bullæ; or it occurs on patches which still retain their pigmentation. Pemphigus, patches of pigmentation, hyperæsthesia, and anæsthesia have, therefore, an intimate reciprocal relationship, and preserve a certain order as to their time and mode of appearance. It is supposed that hyperæsthesia invariably precedes the occurrence of anæsthesia. For instance, a patch of skin as large as a half-crown, on the back of the hand, or on one side of the forehead, appears hyperæmic, and of a pale pinkish-red colour. Such a spot is unusually sensitive, or even painful when touched. This condition lasts for several months. Anæsthesia then makes its appearance, the patch having meanwhile become either intensely white or else of a brown colour. The red border, on the contrary, has continued to advance, and forms a narrow hyperæsthetic zone around the anæsthetic area. Beyond this sharply-defined zone, the skin is of normal appearance, and possesses a normal degree of sensitiveness. Just as there may be but one or several, or very many patches, which then extend over large tracts of skin, so, also, the anæsthesia may be limited to one or several spots, and may, after a time, affect the skin of almost the entire body. This is all the more likely to happen, from the fact, already mentioned, that anæsthesia may make its appearance on parts of skin which have not undergone any discoloration. The anæsthetic spots do not by any means correspond, either in regard to their conformation or locality, to any definite nervous distribution. There is, in this respect, the greatest irregularity.* The anæsthesia corresponds to the distribution of several nervous trunks, without, however, occupying the whole region supplied by any one of them. Or, in the midst of a large anæsthetic tract, there is an irregular patch which retains its sensibility. Further, no matter what may have been the previous condition of the skin which has become affected by anæsthesia, the latter is never permanent from the outset. At first it often disappears completely after it has existed for some days or weeks. The portion of skin affected regains its normal degree of sensibility either temporarily or permanently, whilst other spots become anæsthetic. The anæsthesia is equally variable in its character. Sensation may be impaired in regard to variations of temperature, though tolerably acute with respect to electricity; or sensation in general may remain perfect, the patient being able to walk without difficulty when the eyes are open, whilst the skin of the feet is incapable of feeling the prick of a needle. It is true that in other cases, or, indeed, as a rule, at a later period, the gait becomes unsteady. In the course of time, the anæsthesia becomes permanent, both in regard to its nature and locality. It spreads, indeed, to the subcutaneous structures, and is then absolute. A pin may be buried to the head in the skin and muscles without exciting the least pain. Without being in the least aware of it, patients often burn themselves at the stove, which they approach too closely on account of a constant feeling of chilliness, and when operations are done upon anæsthetic parts they do not give rise to any pain.

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* According to the Norwegian physicians, anæsthesia is invariably preceded by hyperæsthesia.

5. *Atrophy.*—Atrophy of the tissues becomes added to the permanent anæsthesia of the skin and deeper structures. In consequence of this condition, the disease assumes a characteristic external appearance. The skin corresponding to the anæsthesia appears thin, dry, and wrinkled in consequence of a diminution in its proper substance, as well as of the subcutaneous cellular tissue and fat. In this way certain limited portions of skin acquire exactly the appearances met with in that of old people, whilst adjoining portions retain the fullness and fresh-

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* See Rigler's drawing, Hebra, 'Zeitsch. der k. k. Ges. d. Ærzte,' 1853, i. B., p. 69; and Griesinger, Virchow's Archiv, v. B., 2 Heft, Taf. iii.

ness of youth.* The muscles diminish in size, the face appears prematurely aged. The countenance wears an expression of suffering and sadness. The skin is of a pale yellow or brown colour, wrinkled and pendulous, the normal lines have disappeared. The emotions are no longer indicated by the countenance. There is an utter want of expression. As the atrophy of the muscles increases, the deformity becomes greater. The countenance becomes distorted by the prevailing action of certain muscles. The upper lid droops in consequence of the atrophy of its muscular apparatus, the lower, of which the cartilage is also thinned, sinks downwards and separates from the eyeball. Stillicidium, xerophthalmos, opacity, and ulceration of the cornea result. The ulceration and perforation of the septum nasi, which sometimes takes place under these conditions, must also be regarded as a disturbance of nutrition. The lower lip falls downwards and becomes everted, in consequence of the paralysis of the orbicularis oris, so that the gums are exposed and the whole aspect is one of "silliness." The saliva flows out of the depressed corners of the mouth. In this form, the mucous membrane of the mouth and pharynx does not undergo any morphological alteration. Sometimes, however, a feeling of dryness in the throat, and violent, unquenchable thirst comes on and lasts to the end of life. Appearances which are due to atrophy of the muscles also become manifested on the hands. Shallow depressions are formed between the thumb and forefinger as well as between the metacarpal bones of the fingers. The flexors of the wrist and fingers acquire an increased power over the extensors. The back of the hand becomes depressed and the palm convex; at the same time, the fingers are flexed and their extremities clubbed. The hand is also flexed and adducted. The skin itself shrinks. In consequence of this, it is stretched over the semiflexed joints, such as the elbows and knees, and the phalangeal articulations, and, in these situations, is devoid of pigment, white, glistening, and thin. The nails upon the clubbed extremities of the fingers and toes appear curved, hood-like (kappenförmig), and thinned, resembling fish scales, or, at a later period, they split up into laminæ, crumble and fall off, either piecemeal or *en masse*.

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* The skin on the back part of the hand, as far as the wrist, of a lady from Buenos Ayres, 40 years of age, who was remarkably fine-looking and well developed, was brown and wrinkled, like that of a woman 70 years of age, and anæsthetic. At the wrist-joint the diseased portion of skin was limited by a red, hyperæsthetic border. Immediately above this was the fine, white, supple skin of the well-shaped forearm. The left hand was that of a beautiful and well-nourished lady. The skin over the left eyebrow, as well as on several parts of the body, was similar to that of the right hand.

The pressure caused by the bony prominences of the extensor surfaces of the joints (phalangeal, elbow, &c.) renders the tense, white, glistening skin covering them thin and atrophic. Its epidermis becomes fissured, and exfoliates. Superficial and, occasionally, very extensive ulcerations are formed, the surfaces of which secrete a thin pus. Such ulcerations are indolent, or quite devoid of sensibility. They soon become covered with a thin, glistening, watch-glass-like scab, and show no tendency to heal. In course of time the disintegration of tissue extends more deeply. The articular extremities of a joint are exposed, the joints are opened, and, in consequence of the slowly progressing process of disintegration and shrinking, a phalanx becomes separated without the least sign of reaction—*lepra mutilans*.

Necrosis and ulceration, however, often occur idiopathically, quite independently of those parts which are exposed to continuous pressure from bony prominences. This necrosis usually affects the anæsthetic portions of the hands and feet, and occurs either in the form of dry mummification, or of the so-called moist gangrene. A fluctuating tumour makes its appearance, for instance, on the sole of a foot which has for a long time been anæsthetic, and, when opened, a quantity of offensive, ill-conditioned pus is discharged. At the bottom of the abscess one or more of the tarsal or metatarsal bones will be found to be necrosed. After the separation of the necrosed portions, a process, which lasts for months or years, and is accompanied by a good deal of suppuration, a corresponding degree of mutilation remains, which, in different cases, may assume the most various forms. Such a state of things is usually accompanied by great constitutional disturbance, such as chills, fever, typhoid, and pyæmic symptoms, in consequence of which the patient may succumb.* In most cases, however, these complications subside as soon as the pus has found a free exit. The necrosed structures are removed, and the wound heals, leaving a greater or less degree of mutilation. In other cases, or on other parts, a mummification of the tissue, involving the skin, tendons, and ligamentous structures, takes place. As a rule, only one phalanx is affected in this way at a time, though several may be affected simultaneously, or at short intervals, but without any regular anatomical order. In some cases, the mummification first attacks the terminal, and in others, the second phalanx. The parts so affected are thrown off, without having caused the least pain to the patient. In this manner, the whole* hand or foot may fall off at the wrist- or ankle-joint. Experience has shown that only the bones and joints of the hands and feet are subject to mutilation.†

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* This group of symptoms may threaten the life of the patient just as seriously as if they were due to any other cause—a wound, for instance.

The process just described is the Lepra mutilans of authors. As may be seen from this description, necrosis and mutilation do not belong to any special form of lepra, but only constitute one of the phenomena met with in leprosy. It is more frequently seen in some countries than in others (New Zealand, Thomson; Egypt, Pruner), but it has been found to occur wherever many cases of lepra have been under observation for any great length of time. Lepra mutilans does not belong exclusively to the anæsthetic form. Not only does it occur in the tubercular variety (see above, p. 147), but the processes which give rise to mutilation in anæsthetic lepra are not limited to the portions of skin which have lost their sensibility, since they also affect parts which are in every respect normally sensitive. In the case of one patient, who had up to that time only been the subject of pigment-lepra‡ (Morphœa nigra, Vitiligo nigra), we have seen the characteristic, dry, mummifying necrosis and mutilation in the stage of general hyperæsthesia. When the anæsthesia has become permanent in numerous spots, it gradually extends over large tracts of skin. In many cases, however, the portions of skin which retain their sensibility predominate, whilst, in others, again, the paralysis of sensation becomes general.

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* Pruner, loc. cit., 167, Danielssen and Bœck, Traité d. l. Sped., p. 277.

† Many fabulous statements used to be made in regard to this condition. A. v. Haselaar, for instance, relates ('Beschrijving der in de Kolonie Surinam vorkommende Elephantiasis en Lepra,' Amstelod. 1835, Bl. 55, note), upon what he believes to be trustworthy authority, that a mulatto affected with leprosy, whom he himself had formerly known, knocked his head against the door while going into the house and fell backwards, his head instantaneously separating from his body. (Cit. nach Virchow, Geschw., loc. cit., p. 527.)

‡ We propose to give a detailed description of this case, because it illustrated the phenomena of Vitiligo nigra in a most characteristic manner, and was, moreover, rendered still more instructive by the fact that mutila-

The other functions of the skin are not all disturbed to an equal extent, nor at a corresponding period. In many patients the whole skin perspires as usual, or it only appears dry on the paralysed portions, or the latter may be covered with a cold sweat. As the skin becomes more and more atrophied, the follicles also shrink, the hair falls out, and becomes thin, till, at last, the head is bald, the eyelashes, eyebrows, and hairs of the beard are destroyed, the skin is withered, dry, wrinkled, like that of an aged person, and everywhere discoloured.

The functions of the organs of generation, concerning the

tion began to take place in the stage of hyperæsthesia, though the Norwegians (S. Hansen, loc. cit., p. 199) have never observed such an occurrence except in the stage of anæsthesia.

Grysar Alte, aged 24, the wife of a merchant from Roman, Moldavia. She is the mother of two living, healthy children, one of which is 6, the other 4 years old. Her last confinement was four years ago. The disease from which she is now suffering commenced a short time afterwards, with lassitude, severe pains in the bones and joints, and a remarkably dark discoloration of the skin. She is of medium height, and extremely emaciated. The skin of the face is of a dirty-brown colour, but not uniformly so, being, here and there, of a paler tint; it is thin and atrophic, as also is the subcutaneous panniculus adiposus, but it is easily pinched up into folds. The expression of the countenance denotes suffering, the cheeks are sunken, the nose thin, as if worn away, the mouth is pursed up (zugespitzt) and incapable of being opened to the normal extent. The skin of the body, and more particularly of the extremities, is darkly pigmented; on the body, in the form of large patches, and, on the latter, in the form of streaks and dots, between which there are white, glistening, non-pigmented spots. On the extensor surfaces of the arms and legs, the punctate, dark discoloration is limited to the vicinity of the follicles, whilst the white colour belongs to the inter-follicular portions of the skin. The two distal joints of the fingers are firmly flexed and cannot be extended, even passively. The toes are flexed in the same manner, but to a less degree. The ends of the fingers are clubbed. The nails are thin, and hood-like in shape (kappenförmig). The hands are semiflexed upon the wrists, and the forearms upon the elbows. There are shallow depressions on the dorsal aspect of the interspaces between the metacarpal bones of the fingers, and between the thumb and index-finger on each hand. The skin covering the prominent exalted activity of which so much has been said by the older authors (since they endeavoured to show that the term Satyriasis was to be taken in this sense), are by no means increased. They are not, however, always annulled, even when the skin of the genital organs has become anæsthetic. It is true, that, towards the end of the disease, these functions cease, but only in common with the general diminution in functional activity.

The temperature of the body becomes considerably diminished. Such patients find it impossible to warm themselves sufficiently, and are never free from a sensation of chilliness. The action of the heart becomes feeble and the pulse infrequent.

Discoloration and atrophy of the iris have also been observed.

The large peripheral subcutaneous nervous trunks are often found to be thickened and knotty, though insensitive to pressure.

The central nervous system also becomes involved in the general derangement. The frequent and general pains of the earlier stages are replaced by repeated attacks of clonic and

extensor surfaces of the fingers, bones of the wrist-joint, and malleoli, is white, thin, glistening, tightly stretched, and superficially excoriated, or covered with thin, yellowish-brown scabs. The skin is everywhere extremely sensitive to the touch. The patient remains constantly in bed, because the tenderness of the feet makes walking and standing painful, and the toes cannot be pressed upon the ground. The general atrophy of the muscular system is also, in part, to blame for the patient's deficient power of locomotion. The mucous membrane of the mouth and pharynx and the internal organs are normal. The appetite is moderate The sleep disturbed. The patient complains of deep-seated pains in the shoulders and the bones of the extremities, which recur frequently and last for hours or days, or come on in the form of paroxysms, which are slight, at first, but increase in severity. Her condition did not undergo any material alteration during her sojourn in the Hospital (from June 7, 1871, to April 1872). The dark pigmentation has become more diffuse, inasmuch as the inter-follicular parts of the skin of the extremities is now discoloured. On the other hand, the colour of many other parts has become rather lighter. The superficial ulcerations, over the knuckles of the fingers and toes, have frequently healed and broken out afresh. A large superficial ulceration existed on the left leg for several months, but eventually healed. At the beginning of October 1871, the ungual segment of the middle toe of the right foot presented a discoloured and shrunken appearance. There was a slightly painful swelling and redness at the distal extremity of the second phalanx. On the 25th of October, the terminal phalanx became spontaneously separated at the joint. The stump of the second phalanx soon healed.

even tetanic spasms. Finally, the senses generally, both physical and mental, become dulled. The patients die in a state of marasmus, or from an attack of tetanus, or in consequence of a colliquative diarrhœa.

Complications.

Various other affections may be associated with the phenomena just described as most intimately connected with the leprous disease. Apart from their clinical interest, they are also worthy of note from the fact that they not infrequently cause a material modification in the characteristic features of Lepra. Thus, for instance, Elephantiasis Arabum has often been observed in combination with Lepra, especially in countries where both diseases occur endemically (Orient, Pruner). A consecutive Pachydermia of the lower extremities and even papillary forms of Elephantiasis Arabum resulting from tubercular and ulcerative lepra are, of course, to be met with everywhere, just as similar complications occur in consequence of Lupus and Syphilis of the lower extremities. An interesting case has been reported by Lawrence, in which a boy, suffering from tubercular lepra, had an attack of Herpes zoster and afterwards of Measles.* Favus, Syphilis, Fibroma molluscum, and universal Eczema have also been observed (Bergmann, Wachsmuth, Pruner, and others).

The most remarkable complication of Lepra is that of Scabies. A whole chapter in the history of Lepra has been devoted to this subject alone. In their great work,† already quoted so frequently, Danielssen and Bœck were the first to describe a peculiar form of Lepra, in which the hands, feet, elbows, face, and other parts of the body were the seat of dry, dirty-brown, or black, horny masses, of several lines and sometimes 1½ to 2 inches in thickness, resembling the bark of a tree. These could only be separated with difficulty. The skin beneath them appeared moist and excoriated. The authors mentioned found an astonishing number of dead acari, both young and old, together with exuviæ and fæces of the same insect, deposited between the lamellæ of the detached crusts. Steffins only succeeded once in discovering a living acarus in this situation. No burrows could be demonstrated. Although some time was required before this condition could be fully explained, the further investigations of Danielssen and Bœck, and Hebra,* have clearly shown that it was caused by the common itch-insect (Sarcoptes hominis.). Hebra (loc. cit.) has shown that the presence of crusts was merely the result of the long duration of the scabies. As it had existed constantly for thirty years or more, the products of the disease had accumulated in large quantities. Since the number of acari had, at the same time, become so unusually large, it was easy to see they had no room for the construction of separate burrows, and that an appearance was produced similar to that of Scabies pecorina. Living acari could always be found when sought for, not between the dry crusts, but in the soft rete, the only place where they could find nourishment. As precisely similar conditions were soon found in persons not affected with lepra,† it became clear that the disease called by Hebra, Scabies crustosa, s. Norwegica Bœckii, has nothing in common with genuine Lepra, but merely represents a modification of Scabies, always likely to occur when this disease is allowed to remain undisturbed for a number of years, and is associated with affections of the skin (Lepra, Syphilis), which are attended with infiltrations of a chronic character, and favour the production of masses of epidermis.

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* 'Journ. of Cutaneous Medicine,' vol. i., No. 2, 1867, p. 221.

† 'Traité de la Spedalskhed,' &c., 1848, p. 215, u. 232, Taf. xxi. u. xxiv.

ANATOMY.

The first accounts of autopsies, and also of anatomical examinations of the skin and nerve-trunks in cases of Leprosy (in its tubercular and flat [macular] forms), were published by Danielssen and Bœck‡ as early as 1848. The examinations subsequently made by Pruner,* Simon,† Virchow,‡ Koebner,§ Carter,‖ Bergmann,¶ Hansen,** Neumann,†† and myself,‡‡ agree in all essential particulars with those of the authors first mentioned, except that the progress made by histology since their time has led to some further discoveries, the reality of which Danielssen and Bœck have since admitted.§§

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* Hebra, über die in Norwegen beobachtete neue Form der Krätze (Hebra on the new form of itch observed in Norway), 'Sep.-Abdr. d. Zeitschr. d. k. k. Ges. d. Ærzte,' Maiheft 1852. Further, ibid., 1853, i. B., p. 69, and ii. B., p. 33.

† Hebra (Rigler), loc. cit., ii. B., p. 33. Danielssen and Bœck, Jagttagelser, i. Heft, Taf. 1. Fuchs, Zeitsch. f. ration. Medizin, v. Henle und Pfeuffer, iii. B., 2 H., p. 261.

‡ 'Traité de la Spedalskhed,' p. 229, Atlas, pl. xxiii., figs. 5 and 6; pl. xxiv., figs. 7 and 8.

1. *Changes in the Skin.*

When a section is made through the infiltrations and tubercles, they have the appearance of yellowish-red, finely granular, or, rather, almost uniformly dense and firm masses situated in the substance of the skin. In places, they almost extend to the surface, as far as just beneath the epidermis. In others, again, a layer of soft, apparently healthy skin is situated over them. They vary also as to the depth to which they penetrate, some extending as far as the subcutaneous cellular tissue. They are not sharply defined, as a rule, but send out irregular processes. In other instances, they are limited by a firm, white (connective tissue, Simon) layer. Under the microscope, the superficial infiltrations of the skin, as well as the tubercles, are found to contain small, round, nucleated, closely crowded cells‖‖ and nuclei (Carter), together with spindle-shaped elements (Virchow, loc. cit.), all of which are imbedded in the delicate fibrous network of the corium. In the younger tubercles, the cellular infiltration is not uniform, but consists of small foci, which are most numerous around the thick-walled blood-vessels, cutaneous glands, and hair follicles, whilst the intermediate connective tissue only contains isolated cellular infiltrations, and is here and there quite free from them. Blood-vessels exist in great numbers immediately around the accumulations of cells, though very few are found within them. The older and larger tubercles consist entirely of such cells, and a delicate fibrous matrix or network. The glandular structures contained within them are quite destroyed, the hair follicles are atrophied, and contain thin, distorted hairs, or only irregular masses of epidermis; the papillæ are either imperceptible or still distinctly visible, but filled with cellular elements. In tubercles which are becoming flattened, the papillary layer of the skin is quite smooth, or altogether absent, the epidermis is thinned, and forms a uniform layer over the infiltrated corium. Here and there, in the latter, there are colloid globules, either isolated or arranged in groups. Within the firm infiltration, the connective tissue of the corium is very scanty. On the other hand, the musculi arrectores pilorum are sometimes met with in a hypertrophied condition.

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* loc. cit., p. 168.

† Hautkr., p. 288, Taf. iii., fig. 6.

‡ Geschw., loc. cit., p. 515, and Deutsche Klinik, 1861, p. 50.

§ Comptes rendus de la Soc. de Biolog., 1861, ser. iii., Tom. iii., pp. 64, 66.

‖ 'Transact. of the Medical and Phys. Soc. of Bombay,' 1862, N. S. N., viii., pl. ii., figs. 13 and 14.

¶ loc. cit.

** loc. cit.

†† 'Lehrb. der Hautkr.,' Wien 1870, p. 329.

‡‡ I have examined tubercles taken from the skin during life.

§§ Jagttagelser, iii. Heft, p. 11, Taf. xiii., fig. 7. Danielssen and Bœck did not originally attach the greatest importance to the local anatomical changes when investigating the nature of Lepra, but after having made numerous analyses of the blood, they arrived at the conclusion that an alteration in its albuminous constituents formed the most essential feature of the disease. Kjerulf (Virchow's Archiv, B. v., p. 23) contends that no value is to be attached to these analyses, as far as the purpose for which they were made is concerned.

‖‖ Virchow, Geschwülste, loc. cit., fig. 178, B.

Danielssen and Bœck also found a very slight cellular infiltration in parts which were merely the seat of discoloration. The skin and subcutaneous tissue beyond the infiltration are normal. In some instances, however, there is a fibrous layer of connective tissue of greater or less thickness surrounding the small-celled infiltration.

It follows from the above description, that the new growth of Lepra strongly resembles that of Lupus, except that the formed elements met with in Lepra are still more permanent than those of Lupus. In consequence of this stability, they seldom disintegrate, and then only at a late period. Their course is exceedingly chronic, and the clinical character of a leprous infiltration may readily be explained by the histological relations just described.

Changes in the Nerves.

The very instructive pathological conditions found by Danielssen and Bœck in certain nerves, in persons affected with lepra, did not attain their full significance till after the more minute investigations of Virchow. The changes in question were regarded in the same light by Carter,* Bergmann,† Danielssen and Bœck,‡ and Hansen,§ and described by Virchow in the following terms.‖

"If we trace a long nerve, for instance, the ulnar, median, or peroneal, we find, as a rule, that it is swollen, not uniformly, but at certain intervals. These swellings are generally situated at parts most exposed to mechanical influences or changes of temperature, either on account of their relation to subjacent bones, or of their superficial position. Thus, for instance, I found the median most diseased where it passes over the carpus, beneath the annular ligament of the wrist, whilst the ulnar was always most enlarged at the elbow. A change in the colour of the nerve, gradually increasing towards the swollen portion, is noticeable. The normal white colour of the nerve gives place to a greyish semi-translucent appearance, and it occasionally assumes a brownish or blackish tint (smoke-grey); at the same time, the nerve is firmer, and, in some instances, even quite hard (sclerosed). The interior of a transverse section is more homogeneous than normal. When examined under the microscope even a low power suffices to show the chief microscopical features very distinctly. The loose connective tissue (the external nerve-sheath) which serves to hold several nerve-fasciculi together, is scarcely altered in the least, at most, the walls of the blood-vessels contained within it are thickened. The nerve-sheath proper (the neurilemma) is usually more or less changed in appearance, though in different cases, to a very unequal extent, the alteration being, in some instances, very slight, whilst, in others, the neurilemma is transformed into a very hard, callous mass. The most important changes, however, are more deeply situated in the septa within the nerve-fasciculi, and in the interstitial substance, properly so called, between the nerve-fibres (Perineurium). They sometimes commence close beneath the neurilemma, in which situation we find a highly refracting material deposited, from thence they are continued along the larger septa, which subdivide the fasciculi of nerve-fibres into a number of still smaller fasciculi. If we now make use of a higher magnifying power, it at once becomes evident that the darker-coloured material which fills the parts mentioned is composed of densely crowded cells, and that these not only correspond to the direction of the larger connective-tissue septa, but are also situated around and between the primitive nerve-fibres."

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* loc. cit., p. 60, pl. ii., figs. 5—11, 'Transact. of the Patholog. Society,' London 1862, vol. xiii., p. 13, pl. i., vol. xiv., p. 2.

† loc. cit., p. 81.

‡ Jagttagelser, 3 Heft, p. 10, pl. xiii.

§ loc. cit., p. 195.

‖ Geschw., ii. B., pp. 522, 523, fig. 179.

In some cases of long duration, Virchow saw a fatty metamorphosis, in others, a complete atrophy of the primitive nerve-fibres. Similar changes have also been observed by Danielssen and Bœck in the smaller nerve-trunks of the corium and subcutaneous cellular tissue.

The affection of the nerves may, therefore, be regarded as a chronic inflammation associated with thickening of the walls of the blood-vessels. The hyperæsthesia corresponds to the first stage of this condition. An increased pressure upon the individual nerve-fibres, or bundles of fibres, caused by the infiltration of cells, results in anæsthesia of the parts corresponding to their peripheral distribution. The alternation of anæsthesia with normal sensibility, so frequently observed, may justly be explained by the supposition that the inflammatory exudation of the early stages becomes completely absorbed, and the pressure which it had exercised upon the nerve-fibres removed. The remarkable fact that the anæsthetic portions of skin do not correspond to the entire distribution of the large nerve-trunks, is also to be explained by the circumstance that, especially in the early stages of the nerve affection, all the fibres of a nerve-trunk are not surrounded and pressed upon by the cellular proliferation. If the proliferation has once become uniform, diffuse, and abundant, and a permanent thickening of the neurilemma has taken place, the compression and, therefore, also, the paralysis of sensation continues, the latter all the more certainly from the fact that, under such circumstances, the nerve-substance itself undergoes atrophy or fatty degeneration.

Owing to the circumstances under which the nerve-changes, just mentioned, make their appearance, they may be interpreted in the same manner as the other infiltrations—of the skin, for instance—caused by lepra; that is, we are justified in designating the former Lepra nervorum, just as the latter may be called Lepra cutanea. Whether the anatomical changes in the nerves, just described, could be recognised and pronounced to be "leprous," without taking into consideration the other clinical symptoms of lepra, is a very different matter, however, and one of great importance. Bergmann* is of the opinion that the new growth of lepra, "which is situated between the fasciculi and fibres of nerves," may be distinguished from an ordinary inflammatory product "by the manner in which its cells are accumulated into small, circumscribed groups, in consequence of which they possess an unmistakeable analogy to the tubercles in the skin." Virchow,† on the other hand, states that he has seen many people affected with tubercular lepra in whom the ulnar nerve at the elbow was swollen and painful—the disease, therefore, being in its first stage—and that the nerve at this part presented exactly the same peculiarities as he had often observed in persons not affected with lepra. In like manner, Hansen‡ says that "the atrophy of the nerve-fibres is not due merely to lepra, but to a chronic inflammation affecting certain parts in association with this disease." We are also of the same opinion. The cellular infiltration along the connective-tissue sheaths of the nerve-fasciculi and nerve-fibres, which is especially marked around the vessels contained in them, the thickening of the walls of the vessels, and, lastly, the thickening of the connective-tissue septa, fatty metamorphosis, and atrophy of the nerve-fibres met with in lepra, are undoubtedly of an important character as symptoms of the disease. They are not, however, pathognomonic of lepra, and can only be regarded in this light when they occur in connexion with and during the existence of other symptoms; for precisely similar changes in the nerves, and consequent disturbances in their function (sensibility) are found to be present, though rarely so, in nerve-trunks in the immediate neighbourhood of any part affected with chronic inflammation. This condition is particularly liable to be met with on arms, legs, hands, and feet which have undergone an elephantoid thickening in consequence of lupoid, ulcerative, and gummatous affections, scrofulous caries, and necrosis, and have consequently been for many years subject to chronic inflammation. Under these circumstances, that is, when a thick, callous, connective, or cicatricial tissue has been formed, sensibility may be very considerably diminished on such parts. This fact, however, does not afford any reason for regarding the affection as Lepra. It should always be borne in mind, because the mere existence of the anatomical changes described in the nerves, and the slight diminution of sensibility, might mislead us into pronouncing the last-mentioned processes to be Lepra, whilst, in reality, merely one of the other inflammatory affections indicated is present.*

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* loc. cit., p. 81.

† Geschw., loc. cit., p. 525.

‡ loc. cit., p. 196.

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* Steudener has fallen into this very error, in describing three cases as Lepra mutilans ('Beiträge zur Pathol. der Lepra mutilans,' Erlangen 1867, 3 Taf. Translation of his inaugural latin thesis, with the title, and of the year mentioned), which, according to our way of thinking, and also according to Bergmann (loc. cit., 67, 75, 77) and Landré (loc. cit., p. 75), were not Lepra at all.

CASE I.—Mutilation of the finger in consequence of necrosis. Page 9, we read:—"The extremely feeble mental capacity of the patient renders an accurate investigation of sensibility quite impossible. Nevertheless, it may be shown beyond all doubt that a slight prick of a needle cannot be felt in any part of the fingers or forearm; if more force is used, however, the puncture is felt, but does not cause much pain."

CASE II.—Callosities and mutilation in consequence of a similar affection of the left foot. Page 21:—"The anterior portion of the foot is quite destitute of sensibility. The anæsthesia is so complete that the parts affected may be pierced with a needle to a considerable depth without exciting pain."

CASE III.—"Thickening of the skin" of the right hand in consequence of a similar process. Page 25, we read:—"Sensibility is diminished, though only to a slight extent." And, further: "Although, in this case, the mutilation is not a very prominent feature, there are other symptoms important enough to justify us in regarding this case as one of Lepra mutilans or L. anæsthetica." We, however, have failed to find any such symptoms mentioned.

Steudener has drawn false conclusions as to the real nature of these cases simply from the existence of a cellular infiltration around the nerve-fasciculi and disintegration of the individual nerve-fibres (Taf. ii., fig. 5). As for the diminished sensibility, this condition is often present in skin affected with Elephantiasis Arabum. It is then due, in great part, to the enormous thickening of the epidermis, though it is often caused by a degeneration of the nerves. In a patient with Elephantiasis Arabum of the right lower extremity, in consequence of an ulcerating syphiloid, we have recently made many punctures, around the ankle-joint, to the

In all the different forms of lepra, and especially in tubercular lepra, the lymphatic glands, and particularly those of the inguinal region, are enlarged, knotty, of a firm, or somewhat tough consistence, and, according to the results of Virchow's investigations,* are infiltrated in parts only, or have undergone a uniform hyperplasia. There is nothing very characteristic about them.† The thickened and varicose condition of the afferent lymphatics is very striking. The affection of the glands just described is of the same significance as the analogous condition met with in chronic infiltrations and chronic inflammatory processes, attended with overgrowth of the tissues affected—Lupus, Syphilis, Elephantiasis Arabum of the extremities.

According to Virchow,‡ Oldekop,§ and Hansen,‖ the testicle undergoes certain changes; so also does the epididymis, according to the last two authors and Koebner.¶ The former (according to Virchow) presents a thickening of the tunica vaginalis and albuginea, and groups of round-cells in the substance of the organ. Some observers have found the testicles to be ill-developed in persons affected with Lepra before the age of puberty.

Of the internal organs, the liver, spleen, and kidneys have often been found in a diseased condition. Notwithstanding the numerous post-mortems made by Danielssen and Bœck, and the great care with which they pursued their investigations, a further study of the subject is required, in order to determine to what extent the changes found in Lepra belong to this disease *per se*, and how far they may be purely accidental, or mere complications induced by the marasmus. The condition of the lungs, pleura, mesentery, and peritoneum, described by the authors mentioned, would seem to indicate a tuberculous disease, rather than a specific leprous affection. It is a fact, however,

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depth of 2‴, without causing the least pain. This circumstance, however, did not make the case one of Lepra.

* loc. cit., p. 530.

† Hansen (loc. cit.) thinks the affection of the glands may be regarded as characteristic.

‡ loc. cit., p. 530.

§ Virchow's Archiv, B. 37, p. 196. Oldekop states that he has also seen "leprous ulcers" in the urethra, fossa navicularis, and in the spermatic ducts near the epididymis and testicle; also in the ovaries, Fallopian tubes, and mucous membrane of the uterus.

‖ loc. cit., p. 196.

¶ loc. cit., p. 63.

that certain affections of the kidneys (pyelitis, nephritis) frequently come under observation during the course of Lepra.*

It is equally undecided whether the changes found in the brain and spinal cord, especially the pigmentation and thickening of the walls of the vessels present in the latter, have any direct connexion with Lepra.†

Diagnosis.—Differential Diagnosis.

Considering the great variety which the symptoms of Lepra present in reference to seat, external appearance, the tissues or organ affected, stage and duration of the disease, &c., &c., we cannot undertake to give a short schematic statement of its characters, as a whole, which would be of any material aid in making a diagnosis. The latter purpose may best be accomplished by keeping in view the whole symptomatology of the affection. The disease is most difficult of recognition in its early stages, when it is only manifested by general symptoms, or by the so-called Pemphigus leprosus. In this respect the circumstances by which the patient is surrounded, quite independently of the case itself, are of assistance to some observers, but are of no value in a general scientific point of view. Thus it happens that physicians who live in places where Lepra is endemic are able to suspect the onset of the disease, or to recognise its presence from its prodromal symptoms, for the simple reason that it is of common occurrence. If, however, a person, born and brought up in another district, where Lepra is infrequent, should present the same symptoms, the chances are that some constitutional internal disorder would be suspected and sought for, and when the bullous eruption made its appearance, the diagnosis of Pemphigus would be established naturally enough, without the least suspicion of Lepra. The anæsthetic form of Lepra, too, which makes its appearance without any distinctive prodromal symptoms, especially when the anæsthesia begins on perfectly normal-looking skin, may not be recognised for a long time; indeed the patients themselves often first become aware of the existence of anæsthesia after the examination made by the medical man. If, on the other hand, cutaneous symptoms, spots, infiltrations, tubercles, atrophy of the skin and of the muscles, the expression of the countenance which we have described, and the peculiar *tout ensemble* of the disease, are already present, the diagnosis is, as a rule, very easy. Nevertheless, the form of the disease may sometimes be such that it is liable to be, and occasionally is, mistaken for some other affection.

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* Hansen (loc. cit., p. 196) states that the disease of the spleen which occurs in Lepra has its seat in the sheaths of the arteries and in the Malpighian corpuscles, and that of the liver may be recognised as a thickening of Glisson's capsule, and a diffuse cellular infiltration along the smaller branches of the portal vein.

† See Danielssen and Bœck, on the one hand, and Bergmann (loc. cit., p. 80), on the other.

1st. For Syphilis. The spots about the size of the finger-nail, and of a pinkish-red colour, which occur on the body in an early stage of the disease, and which become pale upon pressure, have a deceptive resemblance to Roseola syphilitica. Still more so if a brownish-red tubercle becomes developed at the centre of each spot. It is then apt to be regarded as a papular and macular syphilide. It is true, the skin which corresponds to the spot is, at the same time, often infiltrated. Nevertheless, the infiltration is sometimes wanting in Lepra, or it is so slight that its presence cannot be made out with certainty. In such cases, a positive opinion can only be formed after a protracted observation, or from the presence of other unmistakeable symptoms of Lepra. Thus, the existence of spots as large as the hand tends to exclude syphilis, because such spots do not occur in the latter disease. The transformation of the colour into white or dark-brown, and the shiny appearance of the surface belong to the maculated form of Lepra. Isolated tubercles cannot be distinguished from those of syphilis. We must bear in mind, however, that, as a rule, large superficial infiltrations are present, such as are never met with in syphilis. Moreover, a careful observation of the lepra tubercles will show that the regular series of phenomena, which always characterise the involution of syphilitic tubercles, are wanting; such are, the central depression of the individual tubercles of larger size, scales and crusts, and ulcers of the peculiar syphilitic form. The tubercles of Lepra are distinguished from those of Syphilis by their whole course. The former exist for a very long time, and seldom become softened; or, if softening does occur, it is of all the tubercles at the same time.

2nd. Lupus. That form of Lepra bears a strong resemblance to Lupus which we have seen in a case described at p. 142, and in which small, superficial tubercles of the size of lentils were formed, being at the same time arranged in groups, and even in circles, as large as a sixpence or half-crown, around a cicatricial or superficially infiltrated portion of skin. The thickened and infiltrated lobes of the ears are also very similar to those of Lupus. In such cases, however, the skin itself is diffusely thickened, oily-looking, uneven, but at the same time smooth, whilst in Lupus there are small tubercles imbedded in the corium.

3rd. A form of Sarcoma pigmentodes, observed by us in a number of cases, the characters of which were quite typical, bears a still greater resemblance to Lepra tuberculosa than even Lupus or Syphilis* does.

4th. Vitiligo† (Leucopathia) may, with a little care, readily be distinguished from Lepra maculosa. In Vitiligo there are only white and brown patches. The white ones are sharply defined, disc-shaped, and always have convex borders, even when they have become very large and irregular in shape, in consequence of several having coalesced. The hairs belonging to the white patches are almost invariably also white. In other respects the skin is normal in character, smooth, pliant, and of normal sensibility.

The white patches of Vitiligo are surrounded on all sides by brown ones, the contours of which are consequently invariably concave, and most distinct just where the two join, whilst from this point the discoloration becomes less and less, as if washed out. The skin of such parts, also, is not in the smallest degree otherwise affected. In the course of time, it becomes evident that the white patches grow larger, the brown territories being proportionately diminished in size. The patient's general health is not in the least affected by the disease. The spots in Lepra present various shades of colour, they are more permanent, and, for the most part, not sharply defined. At the same time the skin has undergone other pathological changes, it is infiltrated or atrophic, hyperæsthetic or anæsthetic. The last-mentioned circumstances also help to distinguish isolated, sharply-defined Morphœa spots* from those of Vitiligo. The hairs upon the white spots of Lepra seldom become grey, and hardly ever uniformly so.

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* See later on, No. 4 of the malignant new growths.

† See p. 176 et sequ, of vol. iii. Such a mistake is more liable to be made in places where Lepra occurs endemically than elsewhere, because similar anomalies of pigmentation are particularly frequent in Lepra itself. Thus, we have seen a patient, who was sent here from the East Indies, on account of "leprosy," but who only suffered from Vitiligo. Macnamara (loc. cit.) actually makes Leucopathia his first subdivision of Lepra (of Bengal), though it is manifestly not Lepra at all.

Many other affections, such as Hysterical Paralysis, Progressive Muscular Atrophy,† various diseases of the Brain and Spinal Cord, Scleroderma, Elephantiasis Arabum, Molluscum fibrosum, &c., can only be distinguished from Lepra by carefully observing the course of the disease, and impartially weighing its different symptoms.

Etiology.

The causes of this most destructive disease have, from time out of mind, been studied by many distinguished men of science. Governments, scientific societies, and corporations have lent their aid, in the hope that their united efforts might succeed in dispelling the obscurity which enshrouds the causes of Lepra. The expeditions made by Virchow, Hebra, and others to Norway, and the appeal made by Virchow to physicians in all parts of the world, were the results of such efforts. These labours were richly rewarded in regard to the nosology of the disease, but the question as to its causes, with which the possibility of its prevention, cure, and extirpation stands in intimate relation, remains as yet unsolved.

According to the present state of our knowledge concerning Lepra and its history, the fact is sufficiently established that it is an endemic disease. There was a time, including chiefly the period between the beginning of the Crusades and the early part of the fifteenth century, in which Lepra prevailed in an epidemic form throughout the whole of Europe.

From the latter date, however, it soon disappeared completely from the countries composing central Europe. On the other hand, it was known that the disease still existed in many parts of Europe, where it was supposed to be transmitted from generation to generation, as an hereditary complaint of an endemic character. The historical and practical treatises already mentioned have defined the geographical distribution of Lepra with tolerable accuracy, both in Europe and other parts of the world; at the same time, many diseases which were considered, till recently, to be endemic forms of Lepra, have been shown to have no connexion with it.

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* Vide p. 155.

† Bergmann, loc. cit., p. 68.

Geographical Distribution of Lepra.—The present geographical distribution of Lepra has been most fully treated of by Hirsch.* In one of the charts attached to Vinkhuizen's† work, a graphic, though not quite correct representation of the same subject is given. At the present time, Lepra exists endemically in Egypt, Abyssinia, Nubia, Sudan, along the entire coast of Africa, north, west, and east, at the Cape of Good Hope, in Madagascar, in the Isle de France (Mauritius), Bourbon, St. Helena, the Canary Islands, the Azores, Arabia, Syria, Persia, the sea coasts, and many islands of the Mediterranean, Palestine, Asia Minor, the south of France, Greece, the Grecian Archipelago, the Ionian Islands, along the shores of the Sea of Azoph, &c., and the Black Sea (Constantinople), in the Crimea, along the coasts and on the islands of the Indian, Chinese, and Japanese Oceans, in the East Indies, China, Japan, the Moluccas, Philippine Islands, the large and small Sunda Islands, New Zealand, in America, in certain parts of the Southern States of North America (New Orleans), Panama, Mexico, the Antilles, Guyana (Cayenne, Surinam), on the coast of Brazil (Buenos-Ayres, Rio de Janeiro), Iceland, in Norway (around Bergen‡), and in Livonia. The enumeration of all these localities is only intended to convey a general idea as to the present geographical distribution of Lepra. The disease occurs in some of them frequently, but only in isolated cases; in others it is endemic, a large number of cases being found within a small area. On the other hand, Lepra now and then occurs spontaneously in countries otherwise free from it. Under such circumstances, however, the only form known is the macular,* and this, too, does not present the virulent characters of the endemic variety. Among the former may be reckoned the twenty-five cases (twenty F., five M.) which Erasmus Wilson has described as Morphœa, and also two similar cases seen by us.†

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* 'Handbuch der historisch geographischen Pathologie,' Erlangen 1860, p. 311.

† De Melaatscheid, Gravenhage 1868.

‡ Tabeller over de Spedalske i Norge i aaret, 1869, og 1870, in Norges officielle Statistik, Heft v., J. 1870 u. 1871. At the end of 1869 the number of persons known to be affected with Lepra was 2104: of these, 785 were in hospitals. At the end of 1870, the number was 2055, of which 762 were in hospitals (p. 13, Tab. xv., and p. 10, Tab. xii.). Allgemeiner Bericht vom Chefarzt T. J. Loberg, p. 14.

The circumstance that Lepra has existed in the localities mentioned for a greater or less length of time, in some of them for hundreds of years, and that it continues to be reproduced among the same races of people, and in the same families, renders it necessary for those who investigate its causes to take into consideration a variety of influences.

1st. *The peculiarities of the climate and the physical characters of the soil.* It is evident, when we consider the manner in which Lepra is at present distributed, that these influences can scarcely be assigned any important place in the etiology of the disease. The climates of Iceland and Bergen, Egypt and Cape Town, Rio and Java, &c., &c., vary extremely from one another; the long winters of Iceland are unknown in the climate of Buenos-Ayres; the moist, foggy atmosphere of many sea-coasts and islands does not exist at Lebanon, and yet the disease is endemic in all these places, and always of the same character. Certain very important facts would seem to indicate, however, that the peculiarities of climate and soil are not without an influence in the development of Lepra.‡ On the one hand, certain cases occur in which persons born and brought up in countries where the disease does not exist, have emigrated to lepra regions, and after a residence of some years have been attacked by the disease. I myself know four striking cases of this kind.§ And, on the other hand, experience has shown that Lepra progresses more slowly, comes to a standstill, or even disappears, when persons affected with it remain for a long period in regions where the disease is not endemic; moreover, the autocthonous cases mentioned by us never exhibited the virulent characters of the endemic forms.

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* As already explained, we cannot admit the cases described by Steudener to have been Lepra.

† A man from Russian Poland and a boy in Vienna.

‡ Holmsen and Kierulf believe in the existence of a peculiar lepra poison, the nature of which they consider to be malarious, and hence the influence exerted by climate and soil.

§ 1. A man, aged 45, born in Turin, went to Cairo at 30 years of age.

2nd. *Peculiarities in the mode of life* (*habitation, food*) have been enumerated among the causes of Lepra. The habitual use of fish, as a food, whether injured by keeping, smoked, or salted, the quality of the water used for drinking, and, in general, the wretched poverty which is common in certain regions among persons affected with Lepra, are the special circumstances which have at all times been regarded as causative influences. The importance of such influences becomes diminished when we consider how many persons of the upper classes are attacked by Lepra of the most malignant kind, though living in populous cities, under all the favourable conditions of European civilisation. Nearly all the cases which have come under our observation here, belong to this category.

3rd. *Contagiousness.*—The theory that Lepra is infectious, and capable of being propagated from person to person by direct contagion, prevailed throughout the middle ages. It was in consequence of this belief that so many leper-houses were established at that period. Even after Syphilis had taken the place of Lepra throughout the greater part of Europe, and notwithstanding that its contagiousness was universally acknowledged, patients affected with this disease refused to share the same room with lepers, for fear of being infected by them.*

The disease made its appearance after he had been there ten years, and in five years more there were numerous tubercles on the hands and face.

2. The wife of the above, ten years younger, and also born in Turin, went to Cairo with her husband, became affected with tubercular lepra two years later (than her husband), but, in the third year of the disease, her hands were already anæsthetic.

3. A woman, aged 48, born in Alsace, went to New Orleans at 17 years of age, and became affected with leprosy in her 44th year, and came to this clinic on June 27th, 1870, with the tubercular form of the disease.

4. A man, aged 34, born in Hamburg, went to Rio de Janeiro at 25 years of age, contracted the disease seven years later, and when he presented himself (as an out-patient in Prof. Hebra's clinic), was found to have tubercular lepra.

* Astruc, 'De morb. vener,' Parisiis 1738, p. 30.

The same notion is still prevalent in many regions, such as Palestine, China, &c. The exclusion of lepers (naturally enough only the indigent ones) from the rest of society is a common hygienic rule in such places, and they are just as carefully avoided by the populace as in the middle ages.*

Landré has recently endeavoured to show that the Leprosy of Cayenne is contagious,† and, therefore, Lepra in general. The attempt, however, is clearly a failure.‡ It cannot be denied that the frequent occurrence of Lepra in members of the same family, and also the fact of persons who have immigrated to countries where it prevails becoming affected with the disease, are arguments in favour of the contagiousness of Lepra. Such instances as the one quoted by us, in which the wife became affected with Lepra two years after her husband, likewise support the theory of contagion. The circumstances mentioned, however, are just as easily accounted for by certain physical and geographical influences, which are the same for all the inhabitants of any one region. There are also plenty of instances in which persons affected with Lepra have lived for twenty-five years or more in the closest terms of married intimacy, occupying the same bed with a healthy spouse year after year§ without the latter contracting the disease.

4th. In the middle ages, Lepra was universally acknowledged|| to be *hereditary*, and, in many places, this is still regarded as one of the ways in which the disease may be spread. The supposition is very plausible, because the disease is indeed frequently met with in the same family, in one generation after another.

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* In the middle ages there was, in many places, a law to the effect that lepers should only be permitted to go out after dark, that they should indicate their whereabouts by means of a bell, and never speak to any one in such a manner that their breath might come in contact with the person addressed.

† loc. cit., p. 67.

‡ Landré is only able to support his cases by the "statements" of patients, &c., according to which one or other of the persons affected with Lepra had "played" with a leper, or in some way had "to do with," or been "touched" by one.

§ Hebra, loc. cit., p. 67.

|| Hence the laws so often enacted in the middle ages, forbidding the marriage of lepers, laws which are here and there still agitated for, or made use of, though only indirectly (as a plea for divorce).

The theory that Lepra is hereditary was most zea lously advocated by Danielssen and Bœck. Not only because they believed in the arguments commonly urged against the other supposed causes, but, also, because they could, in many cases, trace the disease, in certain families, both upwards to ancestors and downwards to descendants. They subsequently* made their originally† very defective genealogical tables much more complete, and gave it as their opinion that the remaining deficiencies could be filled up, if the means of collecting exact statistics continued to improve in the same degree as they have done for the last few years. Strong arguments were advanced even by Hjort‡ and Holmsen‖ against the theory of hereditariness of Danielssen and Bœck, Conradi,§ Kessler,¶ and others.

Bidenkap** and van Someren†† have shown that in a large number of cases, Lepra could not be proved to be hereditary, and that, on the contrary, the disease attacks many persons whose families have never shown any trace of it either in the direct line or in any of the collateral branches. Moreover, the fact, already mentioned, of persons born in Europe, in regions where Lepra does not exist, and of healthy parents, being attacked by Lepra after they have immigrated to countries where it prevails, is not at all consistent with the theory that the disease always originates from some hereditary cause. The term inherited, however, could not in any case be made applicable to Lepra in the same sense as it is used in treating of Syphilis. Lepra has never been observed in the children of leprous persons immediately or within a short period after birth.‡‡ It always makes its appearance at a later period, only a few cases having been observed as early as three years of age.[*] It is true that instances have occurred in which the children of leprous parents have been attacked by the disease after they had emigrated to countries free from Lepra. Such individuals had, however, passed the first years of their lives in lepra districts, and, consequently, might very probably have already acquired the germs of the disease before they left the place of their birth. Moreover, Guyon[†] gives an account of a family in which Lepra had for a long time appeared to be hereditary, but did not again manifest itself after they had left the Tropics and settled in Paris.

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* 'Traité de la Spedalskhed,' p. 335.

† Jagttagelser, iii. Heft, pp. 11 and 12.

‡ Norsk Magazin for Lægevidenskaben, 1857, B. xi., Bl. 450.

§ Ibid.

‖ Ibid., Bl. 209.

¶ Virchow's Archiv, B. xxxii. p. 258.

** loc. cit., B. xiv.

†† A brief historical sketch of the Madras Leper Hospital.

‡‡ Danielssen and Bœck think that even the fœtus may become affected with Lepra ('Traité de la Spedalskhed,' p. 329). In support of this view, they refer to the "statements" of parents whose children they have seen with fully developed Lepra at a very early age (5 to 8 years), and according to whom the children were marked with spots, tubercles, or bullæ at birth. In Theodoricus (Hensler, E., p. 29) we read: "Item potest generari, ex coitu leprosi cum prægnante, quia inficitur fœtus, licet non inficiatur mater."

Though, when we consider the mass of evidence furnished by the genealogical tables of Danielssen and Bœck, Conradi,[‡] Bidenkap,[§] and by the experience of others, it is impossible to discard the theory of inheritance, as Hjort[||] has endeavoured to do; nevertheless, we cannot admit the disease to be inherited like syphilis, or that it is, strictly speaking, hereditary. This term can, as Virchow very justly remarks, only be taken in the sense of a predisposition to Lepra, just as a predisposition to Tuberculosis or Carcinoma is generally considered to be hereditary, the development of these diseases being induced by certain external circumstances, or, under favourable conditions, not taking place at all.

Although, from what has been said, it may be seen that the question as to the cause of Lepra is as yet by no means decided, it would, for the present, seem not unreasonable to suppose that certain physical and geographical peculiarities of particular countries serve as etiological influences in the production of the

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On the whole, no great importance can be attached to such an opinion, since, even at that time, all sorts of etiological influences were suggested, and after they had been enumerated, he goes on to say: "Quoniam generatur (Lepra) ex omnibus causis, ex quibus generantur omnes morbi."

[*] In a boy, 5 years of age, we have seen Lepra which had existed two years. A similar case is reported by Bidenkap (loc. cit., Bl. 813).

[†] Compt. rend. de l'Acad. des Sciences, T. liv., p. 892.

[‡] Norsk Magazin for Lægevidenskaben, 1851, B. v., Bl. 560; 1857, B. xi., Bl. 209.

[§] loc. cit., Bl. 811.

[||] 1857, 'Forhandlinger ved de Skandinaviske Naturforskeres,' Christian. Bl. 401, and Norsk Magazin, Bd. xi., Bl. 450.

primary disease, whilst its propagation, when once developed, is more or less aided by hereditary predisposition.

Prognosis.

As a rule, the prognosis of Lepra must be unfavourable, since the disease almost always undermines the constitution, and terminates fatally. Under certain circumstances, however, its course may be less unfavourable. The tubercular form of Lepra leads most rapidly to a fatal termination. This takes place, on the average, in from eight to nine years (Danielssen and Bœck). Its course may, however, be so acute as to destroy the patient in a few months. Death also results from the anæsthetic form, but only, as a rule, after the disease has lasted eighteen or nineteen years. If, in the course of tubercular lepra, the symptoms of the anæsthetic form make their appearance and obtain the upper hand ("mixed" form), the disease becomes protracted just as in the simple anæsthetic variety. The unfavourable course in all these forms, as observed in endemic lepra, both among natives and immigrants, depends not only on the very important local processes, but also more particularly on the manifest deterioration of the whole system—on the character of the constitutional disease. Moreover, the prognosis is all the more unfavourable if the patient remains in the lepra district, and is unable to obtain any suitable treatment, medicinal or hygienic. On the other hand, the course of the disease is more favourable if the patient changes his residence at an early period to some place where Lepra does not prevail, and, at the same time, is placed under favourable conditions with regard to treatment and hygiene. The duration of the disease then becomes longer, and its character less severe. It may be brought to a standstill, or even, in some rare instances, become cured. The course of the disease is also milder, even in the children of leprous parents, and born in lepra districts, if they have emigrated in early childhood to some place where Lepra does not prevail, and are only subsequently attacked by it. Cases of a mild character may also occur in places where Lepra is endemic, and sometimes the complaint ceases to progress, or even disappears; only, however, as a rule, under very favourable medicinal and hygienic influences. Cases of indigenous Lepra, such as those observed by Er. Wilson and ourselves, may be said to have been of a favourable character, inasmuch as they were simply local affections, and the general health of the patients did not appear to be in the least impaired.

Treatment.

Unfortunately, all the therapeutical agents hitherto employed in the treatment of Lepra have remained so far unsuccessful that we are still without any specific remedy or method of cure. Various preparations of mercury, iodine, arsenic, antimony, and vegetable infusions have received the most extensive trial, but have all been abandoned as useless. In fact, every well-informed physician admits the general inefficacy of all medicinal agents in the treatment of Lepra, and regards it (with the exception of the local forms of Morphœa, above mentioned, and a few cases of universal Lepra) as incurable.* This discouraging result is all that has been as yet obtained from the manifold experiments in the way of treatment, notwithstanding that, from time to time, new remedies for Lepra have been discovered, and highly extolled, some of them by physicians, and others by the laity or charlatans.

Thus there have been recommended, more particularly in the maritime districts and islands of southern and eastern Asia (though, as an accurate investigation has shown, without the least success), the oils, extracts, infusions, decoctions, &c., of plants, some of which are known, whilst the species of others has not yet been determined. Assacou,† madar, hydroctyle asiatica, chaoulmoogra, veratrum, asclepias gigantea, hura brasiliensis, hura crepitans, sinugaga,* all kinds of mineral substances (sulphate of lime, alum, silica, cinnabar, oxalic acid, oxalate of potash and soda, antimony, bismuth, arsenic); and various other materials (wax, resin, cochineal, ossa sæpiæ, &c.). In consequence of all this disheartening experience, the opinion has gradually gained ground that any endeavour to find a specific remedy for Lepra may be regarded as utterly hopeless, whilst the only procedure from which anything can be expected is a simple and rational treatment of the symptoms. Any recommendation which advocated the carrying out of a methodical plan of treatment would be inconsistent and opposed to all general principles, and, as has happened not infrequently already, would tend to defeat the object in view.†

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* In this respect, too, Danielssen and Bœck have rendered great service. They have not only tried all the remedies and modes of treatment mentioned, but, also, a vast number of others—the heroic, derivative methods not excepted ('Traité de la Spedalskhed, 1848, p. 346 et sequ); and even, what is pardonable from the scientific spirit in which it was carried out, the artificial production of syphilis in persons affected with Lepra, in the hope that the creation of a syphilitic dyscrasia might transform or annihilate that of leprosy. The mode of procedure last mentioned had, however, no other result than that syphilis became developed in addition to and in spite of the lepra, and disappeared under the use of mercury, whilst the lepra remained unaltered. ('Syphilisationen anvendt mod Syphilis og Spedalskhed, ved Danielssen,' Bergen 1858.)

† See, especially, 'über die Geheimmittel gegen Lepra auf Java bei

It suffices to say that everything must be done which can tend to improve the state of the general nutrition, or can aid in removing or alleviating certain troublesome local symptoms.

1st. *General Treatment.* It is of primary importance that the patient should leave the district where Lepra is prevalent, and take up his abode for a long time in some healthy (mountainous) district where the disease does not exist. A comfortable habitation, nourishing diet, oleum jecoris aselli, chalybeates and bitters internally, if the digestion is imperfect, warm baths (or cold ones in the summer time), sea baths, iodine, soda, sulphur, or simple warm spring baths, vapour and douche baths, moderate and methodical hydropathic treatment, a proper amount of bodily exercise, must, with due regard to special circumstances, the time of year, &c., all be made use of and varied in such a way as to alter and improve the state of nutrition. With the exception of medicines, which tend to improve digestion, and the state of nutrition (iron, oleum jecoris aselli, bitters) or of such as are intended for the relief of particular symptoms (quinine, narcotics, salines, &c.), we do not employ any internal remedies.‡

Friedel' (Friedel's description of the secret remedies used for Lepra in Java), Virchow's Archiv, B. 27, p. 198.

* Er. Wilson, 'Journ. of Cutaneous Medicine,' January 1869, ii., 8, p. 443.

† Dr. Greiner, 'Journ. ter Beverdering, d. geneeskundige Wetenschapen,' Niuwe Serie, 'Bitrayen to de Behandling der Lepra,' 1860, Batavia.

‡ Calcar. oxalica (12 grains de die) has recently again been administered for several months at a time in this clinic, without any perceptible benefit.

2nd. The object of *local treatment* is to cure any ulcers* which may exist, promote the absorption of any tubercles and infiltrations, and diminish the local pain of erysipelas, &c. In this respect we adopt a course of treatment founded on general principles. According to existing indications, the ulcers may be cauterised, treated with potassa, covered with Lister's dressing, Empl. Hydrargyri, &c. If inflammation occurs, it is to be treated by cold applications. The tubercles and infiltrations in the mucous membrane of the mouth and larynx, and painful rhagades on the tongue, are improved by the application of a solution of nitrate of silver; circumscribed and diffuse infiltrations of the skin and nerves may be painted with iodine, or covered with Empl. Hydrargyri, or even destroyed by caustics. The local treatment is, therefore, in many respects, similar to that of Lupus (vide p. 100 et sequ). For local and general hyperæsthesia, subcutaneous injections of morphia (of a solution containing three grains to two drachms of distilled water) or of atropine (gr. $\frac{1}{40}$ pro dosi) are of service. For anæsthesia and other paralytic conditions, Danielssen and Bœck have found the use of electricity, continued for months, beneficial to a certain extent. Under such treatment, we may observe that the affection undergoes a change for the better, assumes a milder character, and progresses less rapidly, and, when not in an advanced stage, it may perhaps become cured.* For this improvement the most essential condition is that the patient reside permanently in a district where Lepra does not exist. Even when the patient remains where Lepra prevails, the disease may, under improved hygienic conditions and the method of treatment described, assume a more favourable course.

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* As already mentioned, Danielssen and Bœck have taken a view of the relation which exists between the eruption and ulceration, and the associated fever, with which we cannot agree. To our great surprise, Bergmann has recently advocated the views of those authors, for he says (loc. cit., p. 40): "As long as the ulcers caused by the disintegration of tubercles continue to discharge pus or ichorous material, the patient feels comparatively well; no sooner have they healed, however, than fever and a grave constitutional affection, with wasting away (consumption), hectic, &c., and all its dangers, set in." And at p. 56, he says: "The importance just attributed to the large ulcerations in the later stages of tubercular lepra, would seem to directly contra-indicate any attempt to heal them."

This would be an unjustifiable return to the already abandoned theories concerning the "driving in" of exanthems and exudations (secretions). It is evident that Bergmann was only thinking of a metastasis of the products of Lepra, by means of which, it is true, a dangerous febrile excitement might be brought about. We, however, are quite sure that a metastasis caused by the absorption of the existing products of the disease cannot be excited at will, but that this takes place independently of our interference. For this reason, we endeavour to heal the ulcers of Lepra just as we do those of Lupus and Carcinoma, because, after they have healed, the patients feel themselves, *eo ipso*, the better, and because a metastasis attended with fever, or a fresh eruption, occurs independently of any such healing. According to the present state of science, the apparently spontaneous "healing" of ulcers, *i.e.*, their ceasing to suppurate, is not to be regarded as a cause, but, on the contrary, as a consequence of some sort of intercurrent, acute febrile attack, just as occurs in connexion with wounds in general (when, for example, they become complicated with typhus, erysipelas, pneumonia, &c.).

In addition to treating Lepra in the persons affected by it, an effort should be made to attack the source of the disease; this, however, can only be done when the latter has been discovered. We have already pointed out how little is known on the subject. Let us hope that the continued co-operation of many able investigators, such as have hitherto been at work in this direction, under the stimulus of science, governments, and philanthropy, will succeed in clearing up the mystery. The means of eradicating the disease, so terrible and so cruelly afflicting to the human race, might then be less difficult to discover.

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* Jagttagelser, 3 Heft, p. 18.

CHAPTER LVI.

(CLASS IX.—DIV. II.)

CARCINOMA.—CANCER.

ANCIENT as the term Cancer is, the clinical idea conveyed by it has not, as yet, received any scientific definition which is sufficiently distinctive and universally accepted. From time immemorial, those tumours have been known as cancerous which destroy the tissues, and especially the skin and glands, by their exuberant growth and disintegration, which regularly return after removal, and, lastly, of themselves, or by affecting the whole system, result in a fatal marasmus. It is evident that, according to this view, a tumour could not be recognised as cancerous from the outset, since, in any case, its malignancy could only be revealed by its further course. Indeed, surgeons have hitherto accommodated themselves to these conditions by the use of various names, which plainly indicate they only formed an opinion as to whether a disease was cancerous or not by observing its course.

Just as Celsus* considered that *κακόηθες* became *καρκίνωμα*, and that the latter developed into ulcus and thymium, and regarded the *κακόηθες* only as curable; so all surgeons have, till recently, held the view that the disease which commences as Scirrhus then becomes Cancer occultus and ultimately C. apertus. It is only since Bichât, Johannes Müller, and Rokitansky so clearly defined the histological relations of pathological tissue developments, and thereby created a new era in the study of pathological growths, that efforts have been made to find trustworthy characteristics for a clinical conception of cancer. Some (Lebert,† Hannover‡) believed they had found these characteristics in the formed elements of the tumour itself, which were designated as cancer-cells. Since, however, a more searching investigation of the subject has shown that the formed elements of cancer cannot be distinguished from equivocal physiological structures (Epithelia*) either by their morphological properties, or by their very striking endogenous proliferation, or even by their occasional pigmentation (Virchow, loc. cit., p. 107), the idea that specific cancer-cells exist must be given up as not proven, or as insusceptible of proof.

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* loc. cit., p. 325, Liber v., ch. xxviii., 2.

† 'Physiologie pathologique,' Paris 1845, T. ii., p. 255, &c.

‡ Müller's Arch., 1844, 'Das Epithelioma,' Leipzig 1852, p 37.

Rokitansky represented the matter in quite a new light when he described the anatomical characters of cancer in the following manner:† "Cancer consists, in the first place, of nuclei and nucleated cells of the most various forms. These, existing in greater or less abundance, afford the elements of the cancer juice, and, together with an interstitial substance, constitute the bulk of the cancer. They form the essential, and, generally, owing to their short duration, and their exuberant production and accumulation, the most important heteroplastic constituent of cancer. The other, less essential, though very important constituent is (new) connective tissue, in the form of the so-called stroma." In addition, however, to its consisting, anatomically, of a cellular (and juicy) "parenchyma" and a stroma supporting this, Rokitansky, at the same time, acknowledged the importance of the clinical character of the growth, that is, its malignancy, and, indeed, lays stress upon this as an indispensable feature.‡

Cancer has been described as of various kinds, fibrous, gelatinous, pigmented, papillary, epithelial, &c. (Rokitansky, loc. cit.; Schuh, "Pseudoplasmen," &c.), according to the character of the cellular constituents, or of the stroma, or the predominance of the one over the other.

The large group of tumours, differing in many respects from each other, which were included within the above definition of carcinoma, was diminished, in the first place, by the fact that before long only those malignant tumours were considered carcinomatous which showed an alveolar structure and distinctly epithelial cellular contents (Virchow, Förster); whilst the malignant tumours whose cellular elements (infiltration) had not an epithelial character, and showed no such regular arrangement, and did not stand in organic connexion with the physiological epithelial layers (of the skin and glands), but, rather, with the connective-tissue strata, were separated as Sarcomata.* The melanotic tumours, also, which, in addition to their malignancy (infectious nature), are distinguished by the presence of dark, diffused, and granular pigment, in and between their parenchymatous (infiltration) cells, and which, since the time of Laënnec, have been regarded as carcinomata, have since been divided into Sarcoma and Carcinoma melanodes, owing to the above-mentioned differences in external character and in the arrangement of their cellular elements.

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* Virchow, Zur Entwicklungsgeschichte des Krebses, &c. Dessen Archiv, B. i., p. 104 et seq., u. Taf. ii., fig. 2, u. 7.

† Pathol. Anat. (3 Aufl.), 1855, i. B., p. 248.

‡ loc. cit., p. 77.

The essential importance of the epithelial character of the cells in regard to carcinoma has lately been especially insisted on and distinctly stated by Thiersch.† His conclusions are founded on the theory taught by Remak, according to which the development of all physiological tissues only follows the type of some one of the three embryonic germinal layers (the corneous layer, the middle layer, and the intestinal-glandular layer), and, also, in pathological processes, no transition occurs between the formations developing from one system and those of another: thus, for instance, epithelium can only proceed from epithelium.‡ Thiersch has sought to apply these views to epithelial cancer, and to prove that the luxuriant epithelial growths of the cancer can only proceed from the pre-existing epithelium of the rete mucosum or of the cutaneous glands (sweat glands). He has ingeniously confuted the objections involved in the isolated occurrence of (epithelial) cancers in extra-cutaneous organs, as bone (Virchow, Lücke§) and glands (Paget, Langenbeck), partly by attributing such to the separation

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* Virchow, Geschw., 2 B., p. 177.

† 'Der Epithelialkrebs, namentlich der Haut.,' Leipzig 1865, sammt Atlas von 11 Tafeln.

‡ Deutsche klinik, 1854, p. 170, "Ein Beitrag zur Entwicklungsgeschichte der krebshaften Geschwülste."

§ Pitha-Billroth's 'Lehrb. d. Chir.,' 2 B., 1 Abth., 2 Heft, p. 207.

(aberration) of portions of the corneal layer (such as the teeth-sacs, Remak), dating from the embryonic period of development; and, partly, by explaining the occurrence of this disease in the tibia, inguinal glands, &c., by assuming that a proliferation of glandular epithelium from the adjacent skin might possibly have penetrated the more deeply-seated bones and lymph-glands, &c., without betraying itself by a simultaneous proliferation towards the surface of the skin.

This theory advanced by Thiersch undoubtedly created a much more substantial basis on which to found opinions concerning this peculiar growth, than the earlier view held by Virchow, in conformity with his general doctrines, and according to which the original proliferation of epithelial elements may proceed from pre-existing epithelium, but that, subsequently, the connective tissue (connective-tissue corpuscles) is stimulated to proliferation, and furnishes the matrix for the epithelial growth. Hence we can easily understand that in this respect most subsequent authors agreed with Thiersch. Nevertheless, this theory of Thiersch's, so logically consistent, was not altogether satisfactory. In the first place, it must result from his theory that epithelial cancer alone is to be regarded as carcinoma. Further, by exclusively taking into consideration the cellular elements (the "cancer mass" of Rokitansky), Thiersch has too much neglected the second important factor of cancer, the tissue which supports these (the cancer stroma). So that his cancer very much resembled other structures which consist exclusively in a proliferation of the epithelium (Epithelioma molluscum, Virchow's Archiv, B. 33, p. 147), or of the enchymatous cells of glands, with a consecutive enlargement of the latter (mammary glands, lymphatic glands), and which have been classed as adenomata in modern pathology. Moreover, the knowledge that the connective-tissue layer, though not demonstrably taking part in the production of cancer, in the sense that it gives origin to the luxuriant masses of epithelium (Virchow), yet undoubtedly does not remain without participation, but, in opposition to what occurs in the pure adenomata, either enters into the formation of the cancer, as the "stroma," or may, possibly (as Virchow thinks), even share actively in its production, could not be disregarded.

Billroth gave expression to these well-founded considerations when he again claimed for the infiltrated tissue (stroma) an importance equal to that of the epithelial cell-elements, and further, under some circumstances, held that the connective tissue served as a matrix for the production of cancer. Thus Billroth* considers "only those destructive tumours as cancerous in which epithelial proliferation and connective-tissue infiltration are concerned to a nearly equal extent." He was, however, constrained to admit that, in addition to the common forms of cancer (epithelial and glandular), having an epithelial origin, there was also another form (connective-tissue cancer) arising independently of this source.†

In like manner O. Weber‡ and Klebs§ have ascribed to the connective tissue a more or less important part in the pathological production of epithelium in carcinoma.

Moreover, Carcinoma, Sarcoma, and Adenoma are met with variously combined, and may pass into one another, inasmuch as the infiltration may possess a carcinomatous (epithelial and alveolar) character, whilst the stroma appears infiltrated by cells, concerning the nature of which no positive opinion can be formed, or they may be considered sarcomatous, from their number and arrangement; or adenoid follicles (dilated and branched gland-tubes filled with proliferating cells) may exist in the centre of a tumour, whilst the interstitial tissue has the character of cancerous (epithelial) infiltration; or, lastly, a tumour may display, at the same part, the small-celled infiltration of sarcoma, but the alveolar arrangement of carcinoma.‖

From the previous description, it is manifest that we are still far from being able to draw an anatomical line of demarcation between Carcinomata and Sarcomata, and that, for the present, the idea conveyed by the term Cancer must remain a conventional one.

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* Vorles, über Geschwülste, Berlin 1868, p. 91.

† Ibid., p. 91; and by the same, 'Critical and Explanatory Remarks to the Work of Prof. Dr. Thiersch, of Erlangen (über Epithelialkrebs),' in 'Arch. für klin. Chir.,' vii. B., pp. 848 und 860; and 871 especially.

‡ Pitha-Billroth's 'Handb. d. Chir.,' iii. B., 2 Th., 1 Lief., p. 497.

§ Virchow's Archiv, B. xxxvii., p. 212.

‖ Virchow, Geschw., loc. cit.; Billroth, loc. cit., Taf. xi., figs. 4 u. 8; Rindfleisch, 'Lehrb. d. pathol. Gewebslehre,' Leipzig 1871, p. 139, das "sarcomatöse Carcinom" (New Syd. Soc. Transl., vol. i., p. 190); Klebs, "Ubergänge von Sarcom zu Carcinom," in dessen Handb. der Path. Anat., 1 Lief., p. 86, Berlin 1868.

We designate as Cancer a new growth, having a malignant character clinically (as formerly understood), and consisting of a mass of proliferating epithelial cells, having an alveolar arrangement, or sending out tap-shaped and tubular processes, and contained in a stroma of connective tissue, infiltrated with inflammatory cells.

The features denoting malignancy of a growth are a great and progressive proliferation of its formed elements, an infiltration of the normal tissue by these, the gradual incorporation of normal tissue into its structure, the tendency to early ulcerative destruction of the latter, the multiple extension of the new growth which occurs spontaneously, or as a recurrence after extirpation, around the glands and lymphatics in adjacent and distant organs, and, lastly, the peculiar general marasmus which proceeds from the "vegetation" of the growth itself, and "not from interference with the function of any particular organ."[*]

The symptoms of malignancy and the anatomical points of distinction mentioned are variously pronounced in the different growths regarded as carcinoma, and also in their different stages. This applies to cancer of the skin. In this (as in the adjoining portions of mucous membrane) cancer becomes developed *idiopathically*; or *consecutively*, by extension from the subcutaneous structures. The above-mentioned characteristic anatomical signs of carcinoma are most purely and typically developed in idiopathic cancer of the skin. It is, therefore, for many authors, the cancer *κατ' ἐξοχήν*. But the principal symptoms of malignancy often fail to appear for a long time, and it is intelligible that many surgeons have hesitated to look upon it as a true cancer, preferring rather to regard it as allied to carcinoma, "cancroid" (Lebert). On the other hand, there are cancers of the skin which very soon betray a malignant character, and hence are unhesitatingly regarded by clinical observers as such, whilst anatomists still class such structures sometimes among the sarcomata, and sometimes among the carcinomata. For this reason, and because points of practical importance (prognosis and treatment) are influenced by the conditions mentioned, it is necessary to subdivide cancer into several varieties.

[*] Rokitansky, 'Pathol. Anatom.,' loc. cit., p. 77.

EPITHELIOMA (Hannover), Epithelial cancer, Carcinoma epitheliale, Cancroid (Lebert), Chimney-sweeps' cancer (Pott).

Epithelial cancer of the skin has only become known as a distinct disease within the last thirty years. Up to the fortieth year of our century, destructive and ulcerative affections of the face, and of the skin generally, were variously designated, according to external appearances, as Noli me tangere, Ulcus rodens, phagadænicus, Serpigo, Lupus, Syphilis, Cancer, Frambœsia, Fungus, &c.[*] It was customary to regard only malignant tumours of glands, especially of the female breast, as cancer proper. It was only after searching and successful anatomical study of pathological tissue-productions that the epithelial composition of many malignant (cancerous) tumours of the skin was recognised. It was pointed out in various publications,[†] especially from the Vienna school, which, indeed, about the year 1840, contributed more than any other to an accurate knowledge of epithelial cancer.[‡] In the year 1842, Rokitansky's histological investigations had already led him to class the malignant epithelial growths with cancer.[§] The fact, which was also first noticed by Rokitansky, that epithelial cancer may exist for years as a local complaint without swelling of the neighbouring glands, and may be successfully and permanently removed (cured), and, consequently, exhibits a less malignant character than is the case with several other varieties of cancer, induced some authors to separate it by name from true cancer. Thus, it obtained from Lebert[||] the name Pseudo-cancer, later, Cancroid, and from Hannover[¶] that of Epithelioma. The converse clinical observation, however, that epithelial cancer not infrequently takes on the nature and course of the most malignant cancer, has been the means of removing all doubt as to the real nature of Rokitansky's epithelial cancer. Virchow placed the histogenesis of pathological tissues in general, and of the epithelial structures in particular, in a new light. Instead of the formerly recognised plastic lymph or exudation, connective tissue was proved to form the matrix of epithelial (new) growth, and especially of cancroid;* whilst, at the same time, the possibility of the occurrence of a "benign" proliferation of the epithelium of the rete mucosum and cutaneous glands was admitted. Hence Virchow and Förster† only regarded those epithelial tumours as cancroid whose formed elements had developed independently of the pre-existing epithelium of the glands or of the rete, and might be regarded as proceeding from connective tissue. Lebert, on the contrary, designated as cancroid those ulcerating, epithelial proliferations which had originated in the epithelium of the mucous layer‡ and follicles;§ therefore, just those which were by Virchow and Förster excluded from cancroid. For these reasons, and because "cancer of the skin," as is shown by experience, often begins so superficially that an intimate relation between it and the connective-tissue layer of the corium cannot always be made clear, the ideas of surgeons concerning epithelial cancer became very unsettled. The name Epithelioma was, moreover, applied (by Virchow|| and Billroth¶) to admittedly innocent epithelioid structures, which certainly had nothing to do with cancer. Owing to the previously mentioned theories advanced by Thiersch, the views concerning epithelial cancer have, during the last few years, exclusively tended towards the opposite side, since the normal epithelium, only, is regarded as the germinal tissue from which the elements of epithelial cancer arise, and the connective tissue is not acknowledged to have any share in its formation. As regards

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[*] Fuchs, whose work ('die krankhaften Veränderung der Haut und ihrer Anhänge') appeared in 1840, still enumerates the "Carcinosen" (loc. cit., 2 B., p. 839 et seq.) as follows:—1. Scirrhus of the skin, with the sub-orders Scirrhus vulgare, caminianorum, tuberosum, eburneum. 2. Encephaloma. 3. Splenoma. 4. Carcinelcosis. Among these, Scirrhoma vulgare, caminianorum, and Carcinelcosis simplex (Ulcère chancreux, Rayer) appear to correspond to our epithelial carcinoma.

[†] Mayor fils (Genève), 'Bullet. de la Soc. Anatomique,' 1844, pp. 218-224 (Thiersch, loc. cit., p. 11).

[‡] Schuh, Pseudoplasmen.

[§] 'Pathol. Anatom.,' 1846, 1 B., p. 385, und 1855, Aufl. 1 B., p. 273.

[||] 'Traité pratique des Maladies cancéreuses et des affections confondues avec le cancer,' Paris 1851, p. 611.

[¶] loc. cit.

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* Virchow, Ueber Perlgeschwülste, Dessen Archiv, 1855, und Gaz. hebdom., Fevr., No. 7, 1855.

† 'Handb. der path. Anat.,' 1855, 1 Th., p. 273.

‡ Thiersch, loc. cit., p. 15.

§ 'Gazette med.,' 28th Sept. 1850, bei Thiersch, loc. cit., p. 20.

|| 'Ueber Molluscum contagiosum,' Arch., B. 33 (Epithelioma Molluscum).

¶ Vorles, über Geschw., p. 74.

the so-called *Papilloma,* also, no reliable anatomical characteristic could be obtained. It is known that it may be identical with epithelial cancer; but it is just as well known that papillomatous structures, with irregularly spherical masses of epithelium and comedo-like* epithelial plugs, having, therefore, all the characters of epithelial cancer, may, nevertheless, possess an innocent character clinically.

In spite of the better insight which we have now obtained into the anatomical relations, and, as it would appear, also, into the histogenesis of epithelial cancer, we must still consider its clinical character of the greatest importance in reference to diagnosis.†

Classification.

Epithelial cancer may be distinguished, according to its position, as that of the skin and that of the mucous membrane. According to its external conformation and mode of extension, cancer of the skin‡ may be—1st, superficial; 2nd, deep-seated or nodular; or, 3rd, papillomatous. These forms are, however, only to be regarded as the external mode of conformation of epithelial cancer, since they represent essentially the same pathological processes, and may pass from one into the other, as well as combine with each other.

A. Epithelial Cancer of the Skin.

1. *The superficial Form of Epithelial Cancer.*

It begins with the formation of one or more very firm nodules, about the size of pins' heads, with a shining surface, of a pale-red or yellowish-white colour, moderately transparent and glistening like wax. When several are present they are sometimes arranged in a linear manner. Usually, however, they unite, and form an irregularly roundish group, with slight protuberances on its surface and edges. Nodules are only rarely met with in this intact condition. As a rule, the first nodule, or the first small group formed by a few nodules, soon becomes excoriated on its surface, and covered by a thin, yellowish-brown, firmly adherent scab, which results from the dessication of a small quantity of viscid, tenacious fluid, which has been exuded. Three or more years may elapse before the diseased spot has attained the size of a lentil. Under such circumstances, patients do not, as a rule, pay the least attention to their complaint. Inexperienced members of the profession may, in this stage, easily mistake the disease for a simple excoriation, or, on account of the unmistakeable though slight prominence of the excoriated area, for a scratched wart. This occurs the more frequently, because epithelial cancer very often originates from a pre-existing wart.

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* See p. 198, vol. i., Rindfleisch, New Syd. Soc.—Tr.

† The conclusions at which Thiersch arrived, at the end of his able study of Epithelial Cancer (loc. cit., p. 55), are here of great importance: "If the diagnosis of 'Cancer' cannot rest upon the histological appearances, we must, instead of them, rely upon the course of the disease. The idea conveyed by the term 'Cancer' must again become, what it was for so long a period, a clinical one."

‡ Schuh distinguishes the epithelial cancers as—1st, superficial; 2nd, granular; 3rd, warty or papillary. Thiersch is satisfied with classifying them as superficial and deep.

In the course of from five to ten years, the diseased part increases more rapidly in size, owing to the development of new, very firm, glistening, transparent nodules, of the size of pins' heads (as noted above), at the border of the excoriated surface. These nodules are characteristic of epithelial cancer in all its stages. The contents of each individual nodule may easily be squeezed out by means of any blunt instrument, or a stick of nitrate of silver. The extruded material has the appearance of a white, glandular (finely lobulated) mass, with a mother-of-pearl-like lustre, and, when rubbed between the fingers, it readily crumbles into smaller globular masses, which are shown by the microscope to consist of accumulations of epithelial cells in irregular clumps, or concentrically arranged around a central mass, and having the characters to be described further on. The surfaces of the new nodules appearing at the circumference of the central group also become excoriated. The marginal addition of such excoriated nodules gives rise to an extensive ulcerated surface, the superficial cancerous ulcer (Ulcus cancrosum vulgare of Fuchs, Ulcus rodens, Ulcus phagadænicus of many authors*).

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* 'Die Geschichte des Ulcus rodens bei Thiersch,' loc. cit., p. 30 et seq.

As a rule, superficial epithelial cancer first comes under observation in this form, which corresponds to an already advanced stage, as a superficial ulcer. It appears as a roundish, generally irregularly polygonal, superficial loss of substance, which is bounded by sharply defined, flat, cutaneous edges, as if cut perpendicularly with a knife. The ulcerated surface is of a brownish-red, or yellowish-red colour. It is uneven, and has a granular appearance, as if dotted over with small glands; feels hard to the touch, bleeds easily, and secretes a small quantity of sticky fluid, which quickly dries, and covers the surface of the sore with a thin, transparent varnish, the latter becoming, in a few days, dried up into a thin, but hard, dry, parchment-like scab. The adjoining portions of skin are either flat and of the colour of normal skin, though already hard and immovable, as if everywhere adherent to the indurated base, or they are now and then the seat of a few roundish, firm, translucent, vesicular-looking nodules which are isolated, or strung together like a pearl necklace, crumble under pressure, and discharge their millet-seed-like contents. The process now advances, on the one hand, by disintegration of the marginal nodules, and consequent enlargement of the central superficial ulcer, whilst, on the other hand, its margins appear to extend peripherally by the continued development of new nodules. A surface of skin as large as a half-crown, or the palm of the hand, may in this way become occupied by the disease in from five to ten years.

Nevertheless, even when the disease has become so extensive, large ulcerations do not always occur. When the ulcer has attained a certain size, for instance, that of a florin or a half-crown, a complete and rapid purulent disintegration of the thin cancerous layer forming the base of the sore may occur in the central part, and complete cicatrisation by granulation follow. Thus the appearance of the disease undergoes an essential alteration. There is now a flat central cicatrix, surrounded by a narrow, superficially excavated, ulcerating, dry, scantily secreting sore, of which the inner margin adjacent to the scar is undergoing restitution, and is, therefore, flattened, whilst its outer border is the seat of the mother-of-pearl-like translucent nodules already described, and hence appears thickened or, at least, steeply beveled and hard. The larger the central scar has become, the more striking is the relation between it and the fringe-like cancerous ulcer surrounding it, for then the surrounding sore often has only the breadth and appearance of a narrow superficial fissure or excoriation.

A more infrequent occurrence is the presence of blackish-grey pigment, which resembles gunpowder sprinkled on, and appears deposited in the margin of old superficial cancers of the skin, either in the position of the new nodules, or else scattered here and there, and also remains in the subsequent cicatrix (Chimney-sweeps' cancer of Pott and Cooper). We are not aware that the cancer becomes of a more malignant character, or partakes of the nature of melanotic cancer in consequence of this deposit of pigment.

A cancerous deposit, having the course just described, is more or less circular in outline. If more extensive, its shape becomes less regular; either owing to the fact that, at this time, the marginal addition of epithelial nodules does not take place equally at all parts, and, consequently, the process makes further progress towards the periphery in some parts, whilst it ceases to advance in others; or the peripheries of several separately developed cancer-deposits meet together and coalesce.

The local affection has, as a rule, a limited duration, that is to say, after the cancer of the skin has extended over a certain area, it comes to a standstill. No new epithelioma nodules are developed at the margin, and the cicatrisation proceeding from the centre consequently reaches the adjoining sound skin. Cicatrisation may become complete in a small cancerous deposit no larger than a sixpence. In other cases, it occurs only at one part of the circumference, whilst in other parts the disease advances, and cicatrisation only occurs later, after many years, a large extent of surface having, in the meantime, become destroyed. Possibly, however, the process, as such, never ceases spontaneously, since, during the course, or after the cicatrisation of one focus of disease, a second and third become developed on adjoining parts, and from these a similar series of changes proceed. Still, as long as the disease only affects the superficial layers of skin in the way described, the system, as a whole, is not in the least affected by it. Throughout the 15–20 years during which the disease lasts, the individual enjoys excellent health. The neighbouring lymphatic glands, also, are not at all enlarged.

The superficial form of epithelial cancer may become of much more serious importance, however, both locally and constitutionally, if during its further progress it penetrates deeply, instead of, or in addition to, spreading superficially. When this takes place the margin becomes harder, prominent, everted, and frill-like (jabotartig). The central sore does not heal over, and its thick, deep-seated base feels massive and hard, in short, the deep-seated form of epithelial cancer becomes developed from the superficial form. Thus, both the local and general malignant action of epithelial cancer, and also its entire course, assume an incomparably more fatal form.

2. *The deep-seated Form of Epithelial Cancer.*

This may either be developed from the superficial form in the manner just explained, or may commence as such. Here, too, the disease starts from a single point, which, throughout its entire course, serves, to a certain extent, as a centre from which the process spreads. From the outset, nodules, varying from the size of shot to that of peas, develop in the skin without any corresponding external manifestations; they are closely packed, occupy the entire thickness of the skin, penetrate deeply, but project very little, or not at all, above the surface, and coalesce to form large masses. In the course of months or years, the nodules become enlarged, both in breadth and depth. They give rise to a tumour, which, at the commencement, is as large as a pea or bean, and which, having, later, attained the superficial area of a sixpence or a half-crown, or more, rises moderately 1–3‴ above the level of the skin, and with steep edges slopes down to the apparently healthy surrounding parts. It has the form of a flat cake, with a smooth, glistening, uneven surface, here and there of a pink or bluish-red colour, traversed by a few dilated capillaries, covered by a thin epidermis, and raised into a plateau, or umbilicated in the centre. The tumour feels very hard, and is at first slightly movable together with the skin, and may be raised at the borders from the subjacent parts, but, at a later stage, it becomes firmly adherent to the subjacent tissues, fasciæ, and periosteum.

This form, also, generally spreads from a single centre of disease, at least at first. At a later stage, new nodules arise close to the original deposit, and enlarge in a similar manner to the first, and, at last, become united with it. In this way, the nodular mass assumes a more irregular and less schematic form. Sometimes the disease, instead of occupying new portions of skin by the repeated formation of nodules, increases further in extent by infiltrating the deeper parts of the corium and other layers of tissue in a diffuse or flat form (infiltrated cancer). In such cases the skin feels hard and rigid for some distance beyond the region occupied by the nodules, which are visible superficially, and seems as if infiltrated by a substance which has been poured out into the tissues and had then immediately hardened, whilst the corresponding surface appears smooth, and altogether unaltered. Many months, and even years, may elapse, during which the nodular mass increases in breadth and depth, but shows no visible alteration in its consistence or external appearance. The shrinking of the cancer, which manifests itself, after a time, in the older, and, consequently, centrally situated parts, is to be regarded as a peculiar process, something akin to involution. Owing to this shrinking, as soon as the nodule has attained a moderate size it becomes umbilicated in the centre, and resembles a strongly contracted scar, whilst the peripheral parts are prominent, coarsely tuberculated, and have the peculiar characters of the above described recent cancer mass, or, in addition to this, are the seat of small epitheliomatous nodules resembling vesicles. Lastly, ulceration of the nodule takes place.

Ulceration sometimes occurs comparatively early, after the disease has existed a few months; in other cases, not till many years have elapsed and the cancerous infiltration has become very extensive, and, especially, has penetrated deeply into the subcutaneous tissue. In some cases, the cancerous ulcer is produced by disintegration of the surface, by desquamation of the epidermic covering of the nodules, which leaves a finely granular excoriated sore, similar to that of the superficial ulcerated epithelial cancer. In other cases, some of the nodules become softened, and this takes place, as a rule, at the centre of the mass, but it may also occur at any other part, if several nodules developed from distinct centres have become united. The skin covering the softened fluctuating spot becomes of a dark bluish-red colour and then very soon gives way. A small quantity of offensive, ichorous fluid, mixed with caseous masses and comedo-like plugs, is evacuated. The covering of the ruptured abscess soon perishes entirely, and its deep surface becomes exposed as a characteristic cancerous ulcer. The cancerous ulcer, whether brought about by ulceration of the surface, or by means of an abscess, gives rise, in time, to a deep, crater-like loss of substance of the cancerous tumour. Its surface appears of a dark brownish-red colour, irregular, finely granular, and secretes merely a thin, sticky substance, which becomes transformed into a brown scab, comparable to a spot of dried-up varnish. The borders of the crater-like ulcer are formed by unaltered cancer nodules, hence they are elevated, everted, and furrowed transversely like a frill, have a puffy appearance, and, at the same time, are extremely hard. The ulceration keeps pace with the cancerous infiltration, which is spreading deeply and superficially. The loss of substance becomes greater and greater; muscles, bones, and cartilages are consumed. The secretion of the ulcerated surface becomes, at times, here and there more abundant, but always remains of an equally ill-conditioned, ichorous character. In some parts, complete separation of the cancerous infiltration, with subsequent granulation and cicatrisation, may occur. But, on the whole, the process advances rapidly and continuously. Locally, lancinating pains are experienced, the neighbouring glands swell into hard tumours, which sometimes suppurate and open in the form of cancerous ulcers. Nocturnal febrile exacerbations and general marasmus, with symptoms of cachexia, follow, and lead gradually to death, if the same is not occasioned earlier by an intercurrent acute disease.

3. *Papillomatous Epithelioma.*

Epithelioma sometimes occurs in the form of a papillomatous growth, or this variety becomes superadded to a superficial, or more frequently to a nodular, ulcerating epithelioma.

It then appears as a new growth, varying from the size of a sixpence or crown-piece to that of the palm of the hand, elevated one or two lines above the level of the skin, having a broad base or a slightly constricted, short neck, and resembling the head (pileus, cap) of a fungus. It is hard, and its surface is either flat, with depressed edges, or slightly drawn in at the centre, being at the same time dry, and covered by a thin, shining, parchment-like epidermis, here and there superficially fissured and studded with brown, firmly adherent scabs. Or, it is superficially ulcerated and the surface of the sore is covered by granulations. Or, lastly, it appears deeply fissured, lobulated or laminated, of a bright red or flesh colour, and œdematous, bleeds easily, and secretes an offensive ichor, which, if left to itself, dries up into yellowish-brown or greenish scabs, which encrust the entire surface. When it appears fissured or ulcerated, comedo-like, friable plugs may often be squeezed out of it.

A papilloma is either superficial, its base situated in the deeper layers of the skin feeling of the same consistence as the normal skin, or it is deeply implanted, in which case the hard mass constituting it may be felt seated deeply, or the skin surrounding its base and extending for some distance beyond the pedicle of the papilloma feels hard and infiltrated; sometimes its surface appears tuberculated and beset with cancer nodules. This difference depends upon whether the papilloma is developed on a pre-existing epithelioma or not; since it may, at one time, develop as such from the first, therefore in a previously normal skin; or from a superficial epithelioma; or, in other instances, from a nodular epithelioma. The further course of a papillomatous epithelioma is similar to that of the nodular variety. Just as in the latter, deep infiltration and ulceration subsequently occur, thus leading to the above-mentioned consecutive and complicating appearances, and to a fatal termination.

After what has been said, the relations of the three forms of epithelioma, which we have described, to one another, cannot be misunderstood. Epithelial cancer may begin in any of the three forms. The superficial form may exist for years as such, generally, however, if left to itself, it passes into the second form. This also originates primarily as such, and has a more malignant and rapid course than the first. Thirdly, epithelioma may also originate in the form of a papilloma, but the latter is more frequently met with in combination with one of the other two forms.*

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* We have seen a flat epithelioma as large as a sixpence on the bridge of a woman's nose, and also an isolated papilloma on her right cheek, as large

Localisation.

Epithelial cancer is most frequently met with on the face, less frequently on the external genitals, generally of males, and it may occur, though very rarely, on any part of the trunk or extremities.*

On the face (with the exception of the lips, in which situation it nearly always exists as a nodular infiltration) it usually begins as a superficial cancer, on the temple, nose, eyelid, or cheek. As such it may, in the course of years, extend over the whole cheek, ear, nose, lip, brow, and hairy scalp, beyond the vertex, and, whilst central cicatrisation occurs, the formation and disintegration of epithelial nodules progresses peripherally in the manner above mentioned. Cicatrisation results in corresponding distortions of the structures affected; of the eyelid (Ectropion), ear, &c. (Phimosis, &c.), just as is the case in other serpiginous superficial ulcerations and cicatrisations. It is but rarely that the cancer involves the conjunctiva. In its further course, and after it has existed many years, the cancerous degeneration and ulcerative disintegration, almost without exception, penetrate deeply, even if the cancer began superficially, and this occurs earlier if the disease is nodular at the commencement. The process of destruction becomes more intense as a consequence. The eyelids are consumed, and an ulcer results, which surrounds the eyeball and penetrates into the orbit. For a long time the conjunctiva remains intact. It is seldom that the eye perishes by consecutive processes (Keratomalachia, Xerosis, Panophthalmitis). The ear may be cleanly dissected off at its point of attachment by the ulceration. The alæ and septum of the nose are destroyed. The cancerous ulceration penetrates from the skin of the cheek to the mucous

as a half-crown, 4‴ in height, situated superficially on the skin, having a broad neck, and presenting, under the microscope, the typical characters of epithelioma.

* According to the tabular comparison of Thiersch (loc. cit., p. 304, and Tab. x.), among 102 cases of epithelioma, in 78, the disease occurred in the region of the face (in 48, on the lip, in 30, on other parts of the face), in 4, on the extremities, and in 10, on the mucous membrane of the mouth. We have seen it occur primarily, once, on the back, between the shoulder-blades, and, in several cases, at or near the navel.

membrane, from the upper lip and bridge of the nose to the bones. In the latter, fenestrated perforations occur, as if made by a trephine, from the hard, infiltrated, elevated edges of which the degeneration extends to the mucous membrane of the nose. The alveolar process and the body of the upper jaw become the seat of a hard intumescence, and then ulcerate and disintegrate, the teeth fall out and the antrum is opened. We can look from the cheek into the cavity of the pharynx. The disease also attacks the brow and the calvaria very severely. The frontal sinuses are opened, partly by the cancer which penetrates from without, and partly by the process continuing to spread from the nares towards the sphenoid bone and into the sinus frontalis. In the latter case the external wall of the sinus first becomes bulged forwards, thinned, and crepitates under pressure. At last, it ruptures, and a foul, papillary, lobulated, fissured mass becomes apparent, having some resemblance to the cerebral convolutions, for which it is often mistaken, and soon becoming blended with the exuberant growth from the skin. After a time, the bones of the skull are also laid bare, are partly exfoliated by necrosis, and partly so permeated by the cancerous mass that they become quite indistinguishable from it. In other places, gangrene occurs, and with it a more rapid exfoliation of the tissues. The dura mater is laid bare, and the pulsation of the brain is distinctly visible. After a few days such spots, too, become covered over again with new, firm, papillary proliferations.

The lip, generally the under lip,* very often becomes primarily diseased in the form of the nodular and infiltrated epithelial cancer, or it is invaded by an epithelioma, which advances from a neighbouring part. The lip is thickened and hard, ulcerated and fissured on the surface, it is heavy, stiff, drawn down, and everted, and saliva flows over it from the mouth. Epithelioma of the lip begins, however, not infrequently, as a shallow excoriation of the muco-cutaneous surface, or as a dry, horny, prominent wart upon the margin of the lip, which has grown within a few months to the height of several lines, and which, though at first very superficial, acquires, at a later stage, a hard, infiltrated, deep-seated base. As a rule, no great length of time elapses before the mucous membrane of the cheek, which, by this time, has become granular and tuberculated, also appears thickened, adherent, immovable, much fissured, superficially ulcerated, and covered here and there with milky-greyish epithelial pseudo-membranes. From the neighbourhood of the inferior maxillary articulation, the disease penetrates into the pterygoid fossa, and encroaches on the mucous membrane of the pharynx.

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* Thiersch attributes to the upper lip a sort of immunity against epithelial cancer. I have just discharged two patients as cured of nodular epithelial cancer which appeared primarily on the upper lip.

When the disease is so extensive and severe, it is easy to demonstrate the identity of the three external forms presented by epithelial carcinoma, which we have described. Whilst, upon the cranium, the infiltration and ulceration have penetrated to the dura mater, and we there find, at intervals, hard or medullary, papillomatous structures, the lips are, as yet, only tuberculated and thickened, not ulcerated, and, at the side of the nose, the cancer presents the superficial, serpiginous mode of extension of the first form.

The forms assumed by epithelial cancer of the genital organs are just as numerous. Upon the scrotum and skin of the penis, it begins, as a rule, as a flat cancer, in which form it may exist for many months, or even several years, and, whilst the central parts are undergoing cicatrisation, it may extend widely in the shape of superficial ulcerating circles over the groin and inner surface of the thigh. The testicles and inguinal glands do not appear in the least altered. In this form the marginal deposition of pigment, already described, is often present (Chimney-sweeps' cancer, Cooper, Pott). Still, we have frequently seen the same pigmentation in superficial epithelial cancer of the face. On the glans penis, it usually commences as a tubercular infiltration, or as a very firm papillomatous excrescence, the surface of which is fissured. Yet we have seen it occur in the superficially ulcerated form, once in the shape of a quite superficial, erosion-like ulcer, of one line in width, which surrounded the urethral orifice. In such cases it presents exactly the same appearance as certain forms of chancre. In tubercular and papillomatous cancer of the glans and sulcus coronarius, a thickening of the dorsal lymphatics of the penis is very soon added, which may be traced as a hard, nodular cord, as thick as a finger, along the dorsum of the organ into the tissue of the pubic region, and from thence it subdivides, and may be followed towards the lymphatic glands of each groin. The latter, as well as those of the pubes, become tumefied, and form hard, nodular masses. The corpora cavernosa of the penis have, meanwhile, become moderately thickened, the prepuce is œdematous, and sometimes in a state of paraphymosis, whilst the glans, by this time, has attained double its normal size. The skin along the course of the dorsal lymphatics, and over the glands of the groin and pubes, becomes reddened here and there. Beneath it fluctuation is perceptible. The abscess opens, the edges of the aperture become everted, hard, and knotty, and a crater-like, cancerous ulcer, with a hard base and granulated, dry surface is exposed.

These changes ensue rather quickly, *i.e.*, in the course of from ½–2 years after a nodular or papillomatous cancer of the glans has made its appearance; they occur also in superficial cancer of the scrotum and skin of the penis, but very much later, after 3–5 years, that is, when the disease has extended to the deeper structures.

When the disease attacks the female genital organs, it generally starts from one of the labia majora. Sometimes, at an early period, it takes the form of a papilloma, with steeply ascending edges, the true character of which is not readily recognised as long as its surface still appears skinned over, or only moderately excoriated. As soon, however, as its surface has become fissured, and the ulcers above described, looking like rhagades, are developed, it becomes clear that we have neither to do with an innocent papillary growth, nor with a syphilitic affection. More frequently, epithelial carcinoma of these structures is met with in the form of a hard intumescence of the labium, which develops gradually, whilst the skin covering it appears of a normal colour, and, with the exception of being thickened, and less readily pinched up in a fold, of a normal character. Almost always, however, there exists a sharply defined superficial sore, as large as a lentil, sixpence, or half-crown, with a granular surface and hard base, which secretes a thin pus, or there is a shallow, cicatricial retraction of corresponding size. It is apt to be mistaken for a chancrous or specific induration, or sclerosis remaining after a chancre has been healed. To an attentive observer, however, the severe lancinating pains of which the patient complains are generally very striking. Every possible cause of deception is soon removed by the further progress of the disease. The existing ulcer extends more deeply, and acquires an unmistakeably cancerous character; at a circumscribed spot, a red, villous, ichorous papilloma develops, the glands over the symphysis and in the groin swell into hard tumours, and the symptoms develop in a manner similar to that described in reference to the same affection of the male genital organs.

The carcinomatous degeneration readily spreads from the greater and lesser labia and the fossa navicularis to the vaginal mucous membrane, proliferates around the urethral orifice, and, at a later period, penetrates this also. From the vagina, the infiltration invades the rectum and urethra. The final result is the formation of an excavation (cloaca), from which an offensive discharge proceeds. The last-mentioned appearances fall exclusively within the domain of surgery, and for this reason it suffices here only to have pointed them out.

Excepting on the face and genital organs, epithelial cancer rarely becomes developed idiopathically. In these situations it generally appears as the continuation of a superficial serpiginous epithelioma, which advances from the cheeks and neck to the region of the collar-bone and upper part of the thorax, shoulder, and upper arm; from the genitals it extends over the pubes and groins to the abdomen and inner surfaces of the thighs. Epithelial cancer very rarely develops idiopathically upon the extremities.* When it does occur on these parts it is almost exclusively met with on the leg, engrafted on some chronic granulation process (Ulcera e. varicibus, Syphilis, Lupus, &c.). We have often seen epithelial cancer developed idiopathically upon the trunk, once as a nodular cancer upon the back, between the shoulder-blades, and several times proceeding from the umbilicus. In the latter situation it commenced as a superficial ulcer, which looked like an excoriation, and dipped into the pit of the umbilicus from its margins, or occupied the summit of the prominent button at the bottom. The character of the disease was recognised at an early stage by the peculiar aspect of the sore and the epithelioid nodules on its margins. After it had existed for a considerable time, the tubercular form became developed from it, whilst not only the base and surroundings of the deposit became much harder, and the ulcer of the navel enlarged and became excavated, in the form of a crater, but also the abdominal walls were extensively implicated in the process. The skin over the affected part could no longer be pinched up in a fold, and the abdominal walls felt stiff, board-like, and uniformly infiltrated.

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* Among the 102 cases of epithelial cancer tabulated by Thiersch (loc. cit.; Tab. vii.) the disease only occurred on the extremities four times.

B. *Epithelial Cancer of the Mucous Membrane.*

Although epithelial cancer of the mucous membrane does not properly belong to the province of the dermatologist, it nevertheless claims our consideration, owing to its very frequent connexion with the similar affection of the skin.

Epithelial cancer extends from the original seat of its development, the skin, to the adjacent portions of mucous membrane, such as the conjunctiva, the mucous membrane of the nose, cheeks, floor of the mouth, tongue, hard and soft palate, pharynx, epiglottis, and larynx; from the genital organs it extends to the vagina and the mucous membrane of the rectum and of the urethra. In certain portions of the mucous membrane, however, it becomes developed idiopathically, without any simultaneous affection of the skin, or in association with such, but isolated from, and discontinuous with, the skin cancer. Idiopathic cancer of the rectal, vaginal, or mucous membrane is, on the whole, rare, but when it occurs in these situations it is prone to assume the form of cauliflower excrescences. The tongue is the part which is relatively most frequently the seat of primary epithelial cancer. It first makes its appearance in the form of a superficial excoriation, as large as a lentil or split-bean, or as a red, tuberculated sore on the side of the tongue, which sometimes, even at an early period, appears deeply fissured. This condition is often regarded as a mechanical injury produced by a sharp tooth, or the stump of a tooth. After a time the base of this superficial loss of substance becomes hardened. The induration forms a hard nodule, imbedded in the substance of the tongue, as large as a hazel nut or walnut. In other cases, the formation of nodules in the mucous membrane or substance of the tongue precedes the superficial ulceration, and its surface only becomes ulcerated and fissured in the manner described, at a later period. It is only while the induration and ulceration are of slight extent that the condition strongly resembles the gummatous formations which result from syphilis. Epithelial cancer also develops idiopathically upon the mucous membrane of the pharynx and larynx. The soft palate becomes transformed into a hard, stiff mass, fissured on its surface, the epiglottis becomes thickened, the œsophagus obstructed by cancerous infiltration of the mucous membrane, the structures of the larynx correspondingly altered, and the whole series of local disturbances and malignant general symptoms are occasioned, which are sufficiently well recognised in works on general surgery.

Anatomy of Epithelial Cancer.

In sections which have been carried perpendicularly to the surface, through the margin of a superficial epithelial cancer, so as to include some of the adjacent sound skin, it may be seen, under the microscope, that the tap-shaped processes of the rete Malpighii are considerably elongated, in comparison with those of the adjoining skin, and project into the tissue of the corium in the form of long, slender, conical cylinders. Proceeding from the margin of the epithelial carcinoma towards its central and ulcerated parts, these epithelial cylinders appear to have penetrated more deeply, and are at the same time broader, so that the papillæ between them appear very much diminished in size, and at last can only be recognised as narrow, fibrous partitions between the individual epithelial cylinders. The latter are separated below from the subjacent tissue of the corium by a more homogeneous layer, which runs parallel to the surface of the sore. In somewhat more deeply seated and especially in thicker (tuberculated) epithelial carcinomata, the epithelial cylinders are provided with lateral processes which have bulbous ends, or branch out again into processes which unite with similar branches and processes of adjacent epithelial cylinders, or terminate as free bulbs.

In sections which have been taken from more uniformly hard and thick cancerous deposits (nodules), we find, for this reason, not only the cylinders above described, which may be traced from the surface to their lower bulbous extremities, and have parallel contours, but also transverse and oblique sections of these, of various shapes, such as circular or oval discs, or tubular forms, like the fingers of a glove, very similar to the appearances met with in sections of sweat glands.* These structures are known as epithelial, or cancroid cylinders (cones). That they consist of epithelium is shown even by a low magnifying power in sections which have been made from the margin towards the centre of the cancer, since those which are situated at the margin represent distinct prolongations of the normal Malpighian cellular processes, upon which is situated the unaltered horny layer. When examined by a higher power, it may be seen that the branched cylinders, which extend more deeply, are made up of the same elements. They are composed of cells crowded close together, which present all the characters of Malpighian epithelial cells, some of them containing two or more nuclei. The external layer of epithelial cells, of which the cylinders are composed, has a regular, pallisade-like arrangement, and comes in contact with the adjacent layers of connective tissue without the intervention of any visible intermediate membrane. This relation is exactly the same as that which exists between the deepest Malpighian layers and the connective-tissue framework of the papillæ. The epithelial cells completely fill the cylinders, so that, as a rule, no cavity exists in their interior. Sometimes a trace of one may be perceived, in the shape of an irregular space, which is either empty, or contains a few nuclei and cells or a fatty detritus; it is not, however, limited by a membrane, but merely by the epithelioid cells, which project irregularly into it. In addition to the solid, club-shaped processes, sections of epithelial carcinoma also show masses which have an alveolar or concentrically-laminated arrangement, their centres containing nuclei, and small round epithelioid cells (Rokitansky), or a fatty amorphous mass, whilst their external layers consist of very large flattened cells, which contain one or several nuclei or younger (nucleated) elements. These structures are the "inflammation-cells" of Gluge; "fibrous capsules" of Jul. Vogel; "alveoli" of Rokitansky; "laminated capsules" of Paget; "globes epidermiques" of Lebert; "brood spaces with concentric lamination" of Virchow; "pearl tumours," "epithelioid pearls," "pearl globes," "epithelial globes" of many other authors. These concentrically-laminated epithelial structures, of various sizes, are found in the midst of the epithelial cancroid cylinders, mostly in their deeper parts, and may also be met with elsewhere. These epithelial globes, as such, are not characteristic of epithelial cancer, since they are met with in other situations, in fact, wherever proliferating epithelium remains for a long time unmolested.*

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* It is undecided whether the structures described as "Sweat-gland ulceration" (Arch. génér., 1854) by Verneuil, Robin; as "Sweat-gland tumour" by Lotzbeck (Virchow's Archiv, xvi. B., p. 160); as "Sweat-gland adenoma" by Rindfleisch, Billroth (Geschw., p. 78), are pure homœoplasiæ, or whether they are not, rather, epithelial carcinomata which have originated in sweat glands. The latter view is the more plausible, since Thiersch (loc. cit., Taf. ix.) has demonstrated a case of the kind, and even Köster, who opposes the adenoid origin of epithelioma, states that the latter may proceed from a "fatty degeneration of the sweat glands" ('die Entwickelung der Carcinome,' Würzburg 1869, p. 55).

In the superficial form of epithelial cancer, the connective-tissue portion of the skin is not notably altered. In the deep-seated form, on the contrary, the epithelial cylinders are everywhere surrounded by a tissue ("cancer stroma"), abundantly supplied with blood, juicy, and infiltrated with cellular elements. In the papillomatous form of epithelial cancer, the papillary outgrowths are traversed by vessels of large calibre, and covered by a thick layer of epithelium, which not only projects in between the different groups of papillæ, but also penetrates the connective-tissue framework of the individual papillary eminences. Sometimes the epithelial cylinders may be distinguished, even with the naked eye, as yellowish bands with parallel contours, which, in vertical sections of the papilloma, run from its base to its surface, at regular intervals, in a radiating manner, thus giving the entire structure a fan-like appearance. The glands and follicles of the skin are not always implicated to an equal extent. Sometimes they are but slightly altered even in tolerably far advanced epithelioma; in other cases they contain cells which have undergone fatty or colloid degeneration (Köster, loc. cit., p. 56); or they become enlarged at an early period by hyperplasia of their cellular elements. Many authorities regard this latter condition as an active or developmental stage of epithelial cancer, which, in such cases, originates from the hyperplastic gland-cells.*

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* Virchow, Archiv, B. 33, p. 152.

The destructive character of epithelial cancer depends upon the fact that the epithelial cylinders, by progressively developing, gradually permeate, and replace the corium and subjacent tissues, and then themselves undergo a retrograde metamorphosis. The normal elements of the tissues (connective tissue, muscle, cartilage, bone) partly undergo atrophy, and are destroyed, owing to the pressure of the epithelioid proliferation, and also other portions become necrosed and gangrenous, here and there, or *en masse*, because they are cut off from their source of nourishment. On the other hand, the proliferating epithelioid mass does not become permanently organised. Its elements either undergo fatty degeneration and are absorbed, or colloid degeneration, and then the mass becomes fissured, breaks down, and forms ulcers. This colloid degeneration is the cause of the peculiar waxy or pearly lustre and dry character of the ulcerated surface which results from epithelial carcinoma. A "mucous" degeneration, primarily of the cells, and secondarily of the stroma, is also met with here and there.†

In this way, epithelial cancer may, at one part, quite disappear (become healed), and granulations may spring up from the tissue which was situated beneath it, and cicatrisation take place, whilst, peripherally, the destructive process advances. The cicatricial retraction, sometimes observable in the centre of an epithelial cancer before ulceration has occurred, is also only the result of an absorption of the epithelioid elements which have undergone fatty degeneration, and the subsequent shrinking of the old, or even of the new, connective tissue.‡

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* Rindfleisch, loc. cit., p. 147, New Syd. Soc. Transl., vol. i., p. 200.

† Billroth, Ueber Cancroide mit Schleimcysten, Virchow's Arch., B. xviii., p. 99. E. Wagner, die Schleimmetamorphose des Krebses, Canstatt's Jahresb., 1860, iv. Foerster, Atlas, xl., 1 u. 2. Thiersch, loc. cit., p. 32. Köster, Cancroid mit hyaliner Degeneration (Cylindroma, Billroth's), Virchow's Archiv, B. xl., 1867, p. 468, Taf. x.-xii. Virchow, ueber die Art der spontanen Rückbildung des Krebses, p. 177 et sequ, Arch., B. 1.

‡ Various opinions have been expressed concerning the histological significance of the spontaneous "cancer cicatrix." It is represented as a shrunken "cancer stroma" (Virchow, Archiv, B. i., p. 185); as a local condensation of the cancer stroma (Rokitansky, path. Anat., B. i., p. 253); by others as a connective-tissue product of the inflamed stroma.

Whilst all who have investigated epithelial cancer are agreed as to its essential anatomical characters, the views held in regard to its histogenesis are considerably at variance. If we leave out of consideration the earlier view, according to which pathological formed elements may develop spontaneously from blastema, and which has recently again been advanced by J. Arnold* in reference to the formation of epithelium, there are three theories respecting their origin especially worthy of notice.

1st. According to Virchow's explanation, physiological epithelia may undoubtedly proliferate, but, in epithelial cancer, it is especially the connective tissue which furnishes the matrix from which the epithelium is produced;† and this is its chief characteristic, in contradistinction to other innocent epithelial growths.

2nd. Thiersch (loc. cit.) has extended Remak's theory to pathological tissue productions, and, in reference to epithelial cancer, has asserted that it is only possible for the formation of epithelium to originate from the pre-existing epithelium of the rete Malpighii, or cutaneous glands‡ (sweat glands). Owing to the clear and scientific manner in which he has advocated this view, it has found many adherents.§

The view held by Thiersch, which we have already more fully explained, is, therefore, diametrically opposed to that of Virchow.

3rd. Köster, in a work|| not second to that of Thiersch, either in its thoroughness or practical character, opposes the conclusions of the latter, whilst, at the same time, though not exactly advocating the views of Virchow, he accords to them a considerable degree of importance. He denies that the epithelial cylinders are continuations of the cones of the rete mucosum, and that the spaces which are found filled with epithelium resembling gland follicles belong to excessively developed sweat

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* Virchow's Archiv, B. xlvi., p. 168, Taf. vi.-viii.

† See above, "History."

‡ loc. cit., p. 137, Taf. ix.

§ Billroth, Aphorismen über Adenom und Epithelialkrebs, loc. cit., p. 871. Klebs, Handb. d. path. Anat., i. Lief, p. 103. Waldeyer, Virchow's Archiv, B. xli., p. 499. Rindfleisch, Lehrb. de path. Gewebl., 1871, p. 133, New Syd. Soc. Transl., p. 180.

|| Die Entwicklung der Carcinome und Sarcome, 1 Abth., Würzb. 1869, 4 Tafeln.

glands. From his investigations, and especially from the fact that epithelial cylinders open into the lymph-spaces, and that many contain an empty channel in their interior, he comes to the conclusion that "the fibrous tissue of the cancer proceeds from the lymphatic vessels, and that the first cancer-cells are altered lymph-cells."* He has not been able to prove exactly how far connective tissue is capable of actually producing epithelium (Virchow) in the further course of the development of cancer, but he finds it necessary to lay stress upon certain conditions (migration of cells, conjugation, Recklinghausen), which have already been mentioned by others (Klebs,† Pagenstecher,‡ Biesiadecki,§ and which render it probable that cells wander from the inflamed and proliferating connective tissue into the mass of the cancer cylinders, and thus contribute to the increase of the latter.‖

We can neither adopt the exclusive view of Thiersch nor the almost equally exclusive one of Köster. Sections taken from the margin of epithelial carcinoma show, beyond all doubt, that the first cancroid cylinders are the epithelial cones of the Malpighian layer, proliferating deeply. That the epithelial lining of glandular organs (sweat glands) may also serve as the starting-point of an epithelioid proliferation, is proved by typical "glandular cancer." If we take into consideration all the facts revealed by modern histology in reference to the part played by the fixed connective-tissue corpuscles in pathological productions,¶ as well as the rapidity with which, as experience has shown, the tissues become destroyed by the cancer mass, we must regard it as extremely probable that perhaps even at the outset, certainly, however, at a later stage of the disease, the connective tissue involved may be stimulated to an epithelioid as well as to an inflammatory proliferation.

Etiology.

Although nothing is known as to the proximate cause of epithelioma, we may mention a series of facts which experience has shown may be regarded at least as its remote or predisposing causes.

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* loc. cit., p. 37.

† Virchow's Archiv, B. xxxviii., p. 212.

‡ Sitzungsb. d. k. Ak. d. W., lvii. B., ii. Abth., Aprilh., 1868.

§ Ibid., 1867, lvi. B., ii. Abth., Junih.

‖ loc. cit., p. 49.

¶ See General Remarks on New Growths, vol. iii., p. 268.

Advanced age undoubtedly predisposes the individual to epithelial carcinoma. Most cases occur after the age of 40. Nevertheless, we have met with cases of epithelial cancer at 30 and 20 years of age, and once on the face of a girl 10 years old.* (Also in a girl 8 years old.) The disease is much more frequently met with in males than in females.† It has not been shown to be hereditary.

Certain local, congenital, or acquired histological conditions of the skin undoubtedly give rise to the production of epithelial cancer. The most important of these are warts, both congenital and acquired (Nævus verrucosus et pigmentosus), since experience has shown that epithelial cancer very frequently takes its origin from such structures. Sometimes it originates from a rather prominent wart (Acrochordon, Acrothymion) with an excoriated surface, which may remain in the same condition for several years without revealing its malignant character. It is not till after the lapse of years that the desquamation and regeneration of the epidermis become more abundant, the surface more fissured, the excoriated area more characteristic, and, lastly, the base of the wart distinctly infiltrated.‡ Another time, the epithelial cancer becomes developed from the flat, so-called sebum-warts, such as are so often met with on the forehead, temple, nose, and back of old people, in the form of dingy yellow deposits as large as a lentil or sixpence. They may be easily rubbed off, and then leave a red, granular, bleeding surface, of which the base and margins may not assume the characters of superficial epithelial cancer for years. We may best convince ourselves of the reality of this transition in cases where such flat sebum-warts exist at some distance from an already developed epithelial carcinoma. We will only admit the supposition which has often been advanced, that the frequent injuries to which warts are subjected during shaving favours the production of epithelial cancer to be correct thus far, that we are convinced that a local increase in the nutritive function of the papillary body or epithelium, whether spontaneous or as the result of irritation, may lead to the formation of epithelial cancer. Since, however, the same condition of things is met with in persons who never shave, or in warts which, owing to their situation, are never injured by the razor, it would appear that such external irritation is not indispensable.

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* See vol. iii., p. 254.

† Of the 102 cases tabulated by Thiersch, 80 occurred in males and 22 in females.

‡ Even on the under lip, which is so often the seat of epithelial cancer, it sometimes begins in the form of a warty excrescence covered by a thick layer of epidermis, and of which the base does not become hard for a long time.

A congenital or acquired alteration in the intimate nutritive relations which exist between the papillary body and the rete mucosum, or even in the formation of pigment which is intimately connected with both, may act as a local cause for an excess in the development of epithelium, such as occurs in epithelial carcinoma. This is shown by the origin of the latter from warts in which the conditions mentioned are inherent. We have seen this result in that peculiar morbid condition which we have described as Xeroderma,* and which, in the case of a girl, 10 years of age, and in another 8 years of age, served as the basis of multiple epithelial cancer of the face. Cases of epithelial cancer which proceeds from chronic granulating sores (Ulcera cruris) or from exuberant granulations (as in Lupus†) are to be regarded in the same light. We have occasionally seen epithelial carcinoma develop on the tongue, or on parts which were the seat of the well-known grey, callous, epithelial patches (Plaques opalines, Keratosis Mucosæ Oris‡) which result from Syphilis.

The local irritation of excoriated or wounded (granulating) surfaces, by mechanical or chemical agents (of the lip by tobacco juice, pressure of a tobacco pipe, or the irritation of plasters, scratches, &c.), is said to cause epithelial carcinoma, and may indeed do so if such irritation is continued for a long time, though the fact is difficult to prove.

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* Page 254, vol. iii.

† Page 63, present vol.

‡ My monograph on 'Syphilis der Schleimhaut,' Erlangen 1866, p. 93. In this case there was no possibility of deception, because the patient was for several years under the observation either of Prof. Hebra or myself, and still suffered from relapses of psoriasis palmaris and mucous plaques all over the tongue and cheeks, at the very earliest period at which the existence of a true carcinoma could be suspected. From this time, it rapidly increased in size, and was extirpated by Prof. Billroth. After its extirpation, the surrounding surface of the tongue still presented the plaques opalines just mentioned.

In a large number of the cases of epithelial carcinoma, however, no cause whatever can be assigned.

Diagnosis.

Due attention to the clinical symptoms, of which we have given a detailed description, amply suffices for the diagnosis of epithelial cancer in its characteristic forms. A proper estimate of the existing symptoms will likewise make it an easy matter to distinguish between this and other similar forms of nodular and ulcerating disease, such as Lupus, Syphilis, Rhinoscleroma, &c. Doubt can only arise in the incipient stage of the ulcerative form, which, for example, occurs on the penis or genitals, and may resemble a chancre with or without induration, or in the papillomatous variety, which may be mistaken for common warts, condylomata, or a papilloma. In fact, in such cases, a diagnosis cannot always be made. A microscopical investigation will sometimes, though not invariably, afford the required explanation, or we may form an opinion by taking into consideration a number of conditions, such as the position in which the disease occurs, its course, the age of the individual, whether it is complicated with swelling of the glands, &c. Thus, if a wart has developed on the lower lip within a short time (a few months), it is to be regarded rather as a commencing epithelioma than as an innocent wart; a rapid intumescence of the corpus cavernosum and inguinal glands leaves no room for doubt as to the character of a superficial ulceration of the glans, even if the sore does not exceed the size of a lentil. Lastly, the further course of such a disease will, in any case, decide as to its carcinomatous character. It is more important to make a correct diagnosis in this form of cancer as soon as possible than in any other, because appropriate treatment is more certain to have a good effect, and the more so the earlier it is adopted.

Prognosis.

The prognosis of epithelial cancer of the skin is more favourable than that of any other form of cancer to which the skin is liable. This statement especially applies to superficial cancer of the skin, and to the nodular variety provided the latter has not extended widely or deeply. Superficial epithelial cancer of the skin may exist for many (10–15) years without any swelling of the glands, or destruction of the deeper tissues, or any visible disturbance in the general health. The nodular epithelial cancer is less favourable in its character, inasmuch as the situation of the disease is deeper from the very outset, and a greater destruction of the tissues, either by the process itself, or by the treatment which must be adopted for its removal, is to be expected. The prognosis of epithelial cancer is most unfavourable, that is to say, its course is most rapid when it has in part taken on the characters of medullary or villous cancer. In reference to the effect which an appropriate method of treatment has upon epithelial cancer, we may say that its prognosis is more favourable than that of other varieties of carcinoma. Epithelial cancer either does not recur at all after extirpation, or, as is more frequently the case, it only recurs locally, continuous with, or in the neighbourhood of, its original seat, and to such a moderate extent that the fresh deposits are always easily dealt with. It never recurs universally, either upon the skin or in any of the internal organs. Even if deep-seated infiltration and ulceration have become developed, the favourable effect of local treatment is so far evident that here and there the further progress of the disease may become checked or delayed, the disturbance of the general health, which has already become manifest, may improve, and the threatened fatal termination be postponed for months or years.

Treatment.

Attempts to cure epithelial cancer of the skin (and of the organs generally) by means of internal remedies have never been wanting. Whenever and wherever an ontological conception of diseases prevailed, and cancer was regarded as a true malum rodens, as an entozoon which consumed the body, the so-called Anticancrosa have been prescribed. They consisted partly in the methodical use of such remedies and modes of treatment as would reduce the body so much that no "nourishment" should be left for the ravenous guest who had taken up his abode within it; partly of such as were supposed directly to destroy the life of the cancer. The Anticancrosa, from the "heroic" Arsenic to the mild Calendula officinalis* and harmless Carbo animalis, are now abandoned by all rational, thoughtful physicians, and the specifics against cancer (more recently condurango) which commercial enterprise or ingenuous faith still occasionally offer to the public, are everywhere met by well-founded doubts as to their efficacy.† We now only make use of those internal and hygienic remedies which experience has shown to be capable of restoring the reduced powers of life (bitters, nourishing diet). We do not, however, hesitate to counteract the several associated local and general symptoms of the disease, and especially the distressing pain, by the use of appropriate remedies (opiates, narcotics).

The only rational treatment of epithelial cancer is its destruction by means of caustics, or its removal by excision.

All those caustic remedies and methods may be made use of for the destruction of epithelial cancer which we are accustomed to apply in the case of lupus, and which we have already described at length (p. 100, &c.); though, owing to the fact that the proliferation of epithelial cancer is, generally speaking, situated more deeply, the more powerful caustics are frequently to be preferred; such as Arsenical paste, Chloride of Zinc in the form of sticks or paste, Vienna paste, Galvanic Cautery, pencils of Nitrate of Silver, or caustic Potash. It is only in cases of superficial, relapsing cancerous infiltrations and ulcers that these remedies are to be applied in a mitigated form. In addition to this, it is necessary to follow the general rules which regulate the treatment of ulcers and wounds, and, according to circumstances, to make use of mild caustics, disinfectant dressings (creosote, Lister's dressing, potash, &c.), and sedative or stimulating salves and lotions. Whilst, with regard to the different caustic remedies and their modes of application, we would refer the reader to what has been said of them under the head of Lupus, considering it sufficient merely to have mentioned them here, we intend, on the other hand, to discuss the therapeutical value of caustics in the treatment of epithelioma more explicitly.

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* Rust's 'Helkologie,' Berlin 1842.

† On "Condurango," Vortrag des Dr. Schroff, jun. gehalten in Wiener ärztl., Verein, 29th Nov. 1871, Sep.-Abdr., aus 'med. chir. Rundschau,' 1871 u. 1872.

There has been much discussion as to the comparative merits of cauterisation and extirpation by means of the knife in the treatment of epithelial cancer, and sometimes the one and sometimes the other has been considered preferable. Those who advocate operation have attributed the predilection which some surgeons evince for caustics to an unnecessary prejudice on the part of the latter and their patients against the use of the knife; whilst the preference of the former for the knife is said by their opponents to be due to an insufficient experience in the use of caustics. If extirpation rendered a return of epithelial cancer impossible, we should be compelled to recommend this mode of treatment unconditionally in all cases. This, however, is not the case; on the contrary, the disease returns after extirpation has been practised, just as frequently as after its destruction by means of caustics, indeed the partisans of cauterisation reproach the other method with a special tendency to return of the disease. Relapses, however, occur after the use of caustics. Consequently, we find, upon the whole, no reason for the adoption of the one mode of treatment to the exclusion of the other, but consider them both equally efficient and indispensable in the treatment of epithelial cancer. According to the difference in the form or position of the latter, its extension superficially or deeply, and according to whether it is of recent origin or represents a return of the disease, it results, that, in some cases, cauterisation, in others, extirpation alone, is indicated or applicable, or either mode of treatment is equally appropriate, and may be adopted with equal success. If due weight is attached to the special conditions of each case, it is always possible to choose the most suitable method of treatment, and then, whether extirpation or cauterisation is undertaken, the result is likely to be successful.

Superficial epithelial cancer is in nearly all cases best treated by cauterisation. At the outset, when the disease is not of large extent, one application of caustic often suffices for its destruction, and then so thin a cicatrix results that the advantages of this treatment as compared with extirpation are obvious. A thin, movable cicatrix of moderate superficial area, for example, on or near the eyelid, or on the nose, cheek,

&c., is always preferable to the cicatrix which results from extirpation, especially if a plastic operation has followed. The use of caustics is still more to be recommended if the area of the superficial cancer of the skin is large, and its central portion occupied by an extensive cicatrix, whilst the cancerous proliferation is only marginal (serpiginous), or at the same time a few disseminated nodules are also present within the limits of the cicatrix. We should not undertake the unnecessary operation of removing all the skin and soft parts of the cheek where the disease extends but little deeper than the corium, when we have it in our power to extirpate each individual nodule with the greatest ease by means of a pencil of caustic, or to destroy even the smallest visible points of origin which are scattered here and there, with arsenic paste.* There is not the least difficulty, however, in eradicating even large masses of epithelial carcinoma. The cancer mass breaks down so easily under the pencil of nitrate of silver that we can penetrate everywhere as far as the healthy tissues, and unfailingly destroy all the diseased portions, whilst, on the other hand, there is no reason to fear an unnecessary loss of healthy, or cicatricial tissue. We learn to appreciate this advantage more particularly in certain localities, for example, when the epithelial cancer is situated near the inner canthus of the eye. These remarks also apply to a stick of chloride of zinc. Nodular epithelial cancer, even, may be converted into a slough by means of arsenical paste, whilst the adjacent healthy parts remain uninjured. One series of applications, however (extending over three days†), does not always suffice, and it is often necessary to make use of the remedy two or three times in succession after the slough caused by each series of applications has come away, till the cancerous mass, even though it extend to the bone, has been destroyed, and has all sloughed out.

Nitrate of silver, chloride of zinc, and the arsenical paste are always indicated when our object is to save as much as possible of the healthy tissues, whilst the escharotics (such as potassa fusa, Vienna paste, chloride of zinc paste, &c.), which penetrate more deeply and also destroy healthy tissues, are always to be made use of where the mass to be cauterised is of large size (papillomatous epithelioma), and the loss of a certain quantity of healthy tissue will not be attended by any disadvantage. Milder caustic remedies, solutions of nitrate of silver and chloride of zinc, creosote, &c., are also suitable applications for the destruction of thin layers of epithelial cancer—for example, the thin islands of cancer tissue, which sometimes remain in the midst of a healthy, granulating sore, in the epitheliomatous degeneration of the conjunctiva, mucous membrane of the nose, &c.

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* Here, also, the same advantage may be derived from the use of arsenical paste as in lupus; by means of it we are enabled to destroy the diseased portions, and avoid injuring the healthy tissues.

† See p. 101 of present volume.

If, in accordance with the existing circumstances, of which we have given a few examples, we know how to choose the most suitable caustic, and, thoroughly comprehending the object to be attained, make use of the remedy with "sufficient energy" and perseverance; if we pay due attention to the formation of granulations and cicatrisation, and regulate these processes by a skilful interference at the right moment, the beneficial effects to be derived from the use of caustics will be shown by the successful result obtained. Further, escharotics are indispensable in the treatment of the relapsing forms, and in cases where the cancerous infiltration and ulceration have made such progress—are so far advanced—that extirpation is inadmissible. We can also strongly recommend the scooping out of the epitheliomatous nodules followed by cauterisation of the base.

No matter whether an epithelial cancer has been removed by the knife or by cauterisation, recurrence always takes place within a shorter or longer period of time. This occurs in the well-known form of small, vesicle-like, translucent, isolated nodules, which sometimes remain for many years limited to the superficial layers of the skin. Every fresh nodule may be destroyed by a single application of caustic. In this manner a permanent cure is effected, or the disease is kept within exceedingly narrow limits. On the other hand, it would be bad practice to extirpate each new nodule with the knife. In cases where an operation with the knife would be quite out of the question, the persistent use of caustics still has an unmistakeably good effect. We are enabled by their use temporarily to check the progress of the disease, both superficially and deeply, to improve the ichorous character of the sore, and even to cause its partial cicatrisation, and thus to get rid of the wearing fever, pain, sleeplessness, and loss of appetite. The general health improves, the patient becomes in every respect more comfortable, the offensive odour and gaping appearance of the sore no longer render his existence a misery to himself and his friends; and, lastly, by this mode of treatment the patient's life may be prolonged for many months, or even years.

On the other hand, epithelial cancer often occurs in such a form, and under such circumstances, that the knife alone can be recommended. Extirpation is especially indicated where the infiltration occupies the deeper layers of the tissues, and reaches to a certain extent beyond the superficial nodules (as may often be seen on the lower lip), or when a relapse occurs, not in the form of superficial nodules, but as deep-seated masses which have grown quickly to the size of a hazel nut or walnut, and are covered by normal skin, or by a cicatrix which has resulted from a previous cauterisation or extirpation. An extensive experience is the best guide in making choice of the treatment to be adopted in each particular case.

CONNECTIVE-TISSUE CANCER.

Besides the epithelial form, there are three other kinds of cancer to be mentioned, which, in regard to their anatomical composition, may be called connective-tissue cancers, and when they occur on the skin, present distinct clinical characteristics.

a. *Carcinoma Lenticulare* (*Lenticulärer Bindegewebskrebs*).

This, probably, never occurs primarily in the skin,* but only, for the most part, as a continuation or recurrence of some variety of cancer of the mammary gland. The above name is derived from the appearance of the nodules which become developed first.

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* My own experience does not permit me to say whether the disease described by Schuh as Carcinoma fasciculatum (loc. cit., p. 311), and met with "in the region of the muscles of mastication and of the cheeks, in the neighbourhood of the ear, on the back, inside of the knee, and thigh," as nodules which originate in the panniculus adiposus, belongs to this category or not.

The skin over a cancer of the breast, which commences as a hard, scirrhous tumour, and, at a later stage, after it has extended towards the surface, becomes drawn in at the centre, and firm, whilst towards the periphery it is tubercular, nodulated, hard in some places, and fluctuating in others, and sometimes presents a crater-like or fungoid, elevated, ichorous surface—becomes diffusely infiltrated, hillocky, of a board-like hardness, glistening, and of a brownish-red or greyish colour. In addition to almost invisible, flat, hard, glistening nodules, as large as pins' heads, or larger, and which are rendered more distinct by transmitted light, other larger, firm, occasionally weeping (excoriated) nodules, of the size of lentils or beans, and of a brownish-red colour, become developed. At the outset they are disseminated, but subsequently unite to form larger, irregularly tuberculated tumours, whilst similar disseminated nodules become developed in the immediate neighbourhood. Still more frequently the tumour, which appears shortly after a hard (scirrhous) cancer of the breast has been extirpated, begins in this form. It is the form concerning which Billroth (Vorles. über Geschw. p. 121) very aptly remarks, "the infiltration soon penetrates the cutis, and, in association with hyperæmia and induration, spreads in it, I may say, like a chronic lymphangitis of the skin, so that the thorax appears as if encased in armour (Cancer en cuirasse, Velpeau)," and which Schuh* describes as "Faserkrebs" ("fibrous cancer"), Billroth as "Bindegewebskrebs" ("connective-tissue cancer"), and Rindfleisch as "hartes Carcinom" ("hard cancer"). The unmistakeably malignant course of this disease has induced all authors who do not sacrifice clinical experience for the sake of a histological principle to class it as cancer. Anatomically, it consists, essentially, of a close fibrous stroma ("Faserkrebs," Rokitansky, loc. cit., p. 259), in the fine meshes of which only a few cellular elements exist, so that one might be inclined to class it with the connective-tissue new growths, or with the products of chronic inflammation.† From a clinical point of view, there is no room for doubt as to its malignancy. Though it must be acknowledged that the complete and permanent removal of scirrhus of the breast is within the range of possibility, the appearance of a disseminated, lenticular carcinoma of the skin, which looks as if it were developed on the surface of a diffuse lymphangitis, is only to be regarded as premonitory of a fatal termination. Extirpation would no longer be successful. The glands of the axilla soon become tumefied, and nodules make their appearance on the skin of the abdomen. The board-like, diffuse infiltration spreads towards the axilla, the arm, on the same side, becomes swollen and œdematous, the induration and eruption of nodules advance from the axilla to the sulcus bicipitalis internus, and extend down the arm. An ichorous discharge from some of the ulcers, lancinating pains, loss of sleep, fever, marasmus, &c., accelerate the fatal result.

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* loc. cit., p. 346.

† Billroth, loc. cit., p. 120; Rindfleisch, loc. cit., p. 142; New Syd. Soc. Transl., p. 193.

b. *Carcinoma tuberosum* (*Knotiger Bindegewebskrebs*).

It makes its appearance in old persons in the form of nodular masses as large as a pea, walnut, or hen's egg, flat, or elevated hemispherically above the level of the skin, and which seldom occur singly or are limited to one region of the skin, but are usually met with in large numbers and scattered over the entire surface of the body. They are especially numerous upon the face and hands, in consequence of which the latter become enormously thickened, nodular, and swollen. The skin which covers the nodular masses is of a dark-red colour, here and there livid, and incapable of being pinched-up into a fold. In many localities; for example, over the dorsum of the foot and the ankle-joint, it is, at the same time, diffusely thickened, covered with thick, dry masses of epidermis, irregularly warty and rhagadic-looking.

The surface of some of the nodular masses is denuded of its epithelium and covered with a yellowish-green, firmly adherent crust. At other parts, the skin has perished and the exposed portion of the nodular mass is occupied by a saucer-shaped, excavated ulcer, of which the base and margins are hard, the latter being, moreover, very tumid and everted. Some of the nodular masses are completely destroyed by ulceration; cicatrisation takes place in the parts which they had occupied, and the local affection disappears. In other parts, the subsequent development of new nodules indicates a continuation of the general affection, which, after the lapse of three or four years, becomes complicated with colliquative diarrhœa and marasmus, and ends fatally. In a case of this kind which came under observation here, in the Clinic for Diseases of the Skin, and upon which a post-mortem was subsequently made, there were multiple carcinomatous nodules, some of them as large as hens' eggs, though the internal organs were entirely free from the disease.*

Carcinoma Melanodes (*Pigmentkrebs*).

Pigmented cancer, Carcinoma melanodes s. pigmentodes, may begin on any part of the body; it is, at first, of small size, and, according to my experience, is usually found on the back of the hand or foot, on one of the fingers or toes, or on the labia majora of females,† in the form of roundish nodules, of plumbago-like or blackish-blue colour, as large as pigeon-shot, peas, or beans, and with smooth, glistening surfaces. The nodules are not all of the same consistency, some are firm, others may be indented like rotten berries. They remain for some time disseminated, finally several coalesce and form a large, irregularly tuberculated mass; or they continue to grow and form a prominent fungoid structure which is seated on a short neck and has a level surface, or is retracted in the centre, whilst it is bounded by depressed, furrowed edges, and is partly of a variegated red colour and partly marked by blackish-grey streaks and dots. A moderate amount of swelling and diffuse infiltration of the soft parts at the seat of the disease are met with at an early period. As a rule, only a few months elapse before several isolated nodules (or one large, confluent nodule) become transformed into an irregular ulcer, the surface of which is sloughy. The surface of the sore has, at first, a gelatinous appearance, like the contents of a berry; at a later period, there is an exudation of bloody ichor and a gangrenous degeneration of the tissues, which, in an astonishingly short space of time, penetrates deeply, as far as the bones and joints. Brownish-red and blackish-blue nodules now become developed in rapid succession. At first, they appear in large numbers immediately around the original production; then isolated, scattered, shot-like granules become developed, or black, bead-like bodies in and beneath the skin are found arranged in a direction corresponding to one of the larger lymphatics, or from the dorsum of the foot along the vena saphena; soon, many other lines of them are seen along the leg and thigh, and, at a later period, the extremity becomes diffusely swollen and the nodules disseminated. The glands of the thigh and groin are hard and tumefied early in the course of the disease. Nodules make their appearance over them, and, in a few weeks, the skin of the abdomen and nates becomes strewn with large and small nodules, so that the latter give to the skin affected an appearance as if coarse gunpowder had been everywhere discharged into it. Only a few nodules make their appearance on the upper half of the body. Emaciation and marasmus make rapid progress, and in a surprisingly short space of time, sometimes within one year from its first appearance, the process leads to a fatal termination.

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* 'Jahresb. d. k. k. allg. Krankenh.,' Wien, vom Jahre, 1865, p. 90.

† See my 'Atlas der Syphilis,' 1 Heft, Taf. xii.

The new growth presents similar characters in the internal organs, but it is generally met with there in still more prodigious quantities.

Experience has shown that an extirpation of the very first nodules does not succeed in checking the disease. For this reason, the operation is seldom undertaken, and the first symptom of pigment cancer may be regarded as indicative of a rapid and pernicious course.

A microscopical examination shows the nodules to consist, for the most part, of a coarsely reticulated, extremely vascular stroma, here and there having an alveolar arrangement. The stroma contains small, round, and larger epithelioid or spindle-shaped cells, partly arranged in irregular clusters and partly in round nests. Many of them contain two or more nuclei or one or two young brood-cells. Pigment of a rusty brown or black colour is found, either as a diffuse staining or as granules, partly in a free state outside the cells, and partly contained within them.

We are of the same opinion as those authors who do not, as some have done, regard the abundant accumulation of pigment as a sort of proliferation or metastasis of pre-existing pigment-cells (Choroid, Nævus pigmentosus), but look upon it chiefly as the result of an excessive supply of blood which characterises many, and especially the so-called medullary cancers, and in the internal organs is usually found so considerable that one sometimes imagines it to be a blood-clot or a tumor cavernosus. That pigment cancer of the skin originates in parts where no abnormal deposition of pigment has previously existed; that many of the nodules are, at first, devoid of pigment and only become of a dark colour after they have existed for a long time; that among many pigmented, some non-pigmented nodules may be found, which, with the exception of not containing pigment, are histologically identical with the former; and, lastly, that under the microscope recent and older hæmorrhages may be seen in some parts of the nodules—are all in favour of the view that the pigmentation is only to be regarded as an accessory symptom.

CHAPTER LVII.

(CLASS IX.—DIV. III.)

SARCOMA CUTIS.—SARCOMA OF THE SKIN.

IN a paper* upon this subject, Koebner very justly observes that sarcomata of the skin are of rare occurrence and have heretofore been more an object of anatomical than of clinical observation. He relates the histories of two cases, in the first of which sarcomata of the skin became developed in large numbers as secondary growths, probably from the lymphatic glands of the groin, whilst, in the second case, the general sarcomatous infection originated primarily in a "nævus" (mole) of the left forefinger, which had existed since childhood, and which became transformed into a pigmented spindle-celled sarcoma.

Both cases terminated fatally within three years. In neither of them could a post-mortem be obtained.

There is one form of pigmented sarcoma of the skin which has a typical character clinically, and which we are able to distinguish from those which, under all circumstances, occur as consecutive (metastatic) outbreaks, and accordingly may originate from the most various primary deposits, and of which the two cases given by Koebner may be regarded as examples. I shall designate the form which I am about to describe as

Idiopathic Multiple Pigmented Sarcoma.

The observation of five cases serves as a basis for the establishment of this as a separate form of disease. I shall here give a special description of them, not only because the subject is new, and the form and course of the disease are of the greatest clinical importance, but, chiefly, because the histories of the cases will also exhibit the symptomatology of the disease, from its outset to its fatal termination, more completely than any abstract description of its characteristic features would do.

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* "Zur Kenntniss der allgemeinen Sarcomatosis und der Hautsarcome im Besonderen." 'Arch. f. Dermatol. und Syphilis,' 1869, 3 Heft, p. 369.

Case 1.—Leonhard Köpf, aged 68, married, blacksmith, from Brodes, Lower Austria, was admitted into the Clinic for Diseases of the Skin on 25th July 1868. The patient stated that as early as the previous summer he had experienced a feeling of "tightness" (Spannung) in the hands. Nevertheless he continued to follow his employment up to the beginning of January 1868. Shortly after this time, however, it became impossible for him to stand, on account of swelling and soreness of the feet, or to work, on account of a similar condition of the hands, and he has been compelled to pass the greater part of the last few months in bed.

Status præsens.—Both feet are swollen to an almost equal extent, their dorsal surfaces are arched forwards, whilst the plantar surfaces have the appearance of being stuffed or padded, and the skin is tense, shining, of a reddish-brown colour, feels very hard to the touch and can scarcely be indented by pressure; it is spontaneously painful, but more so on pressure. Upon the dorsum of the right foot there is a slightly depressed patch, as large as the palm of the hand, coloured by blackish-grey pigment, firm, and of a cicatricial appearance. It is surrounded by a circular margin 2‴ in height and composed of brownish- or livid-red, nodular masses; this margin feels very hard to the touch, and here and there appears as if notched by transverse, darkly pigmented, scar-like indentations. Towards the inner side of the foot, and from thence over the extensor surface of the toes, the skin is transformed into a firm, rough, nodular, unequally thickened mass, which is painful on pressure, and varies in colour from a brownish- to a bluish-red. The whole surface is covered with epidermis which, here and there, over the most prominent portions, is raised in the form of fine lamellæ. From the ankle-joint upwards, as far as the knee, there are several isolated, irregularly distributed, very hard nodules, as large as peas or beans, of a brownish- or bluish-red colour, the surfaces of which are partly glistening and partly covered with fine scales. The greater part of each nodule is either situated above the level of the skin, so that its base is placed superficially upon the latter structure, and may be distinctly isolated with the fingers, or it extends somewhat more deeply, as far as the subcutaneous cellular tissue, though it may still be raised with the skin and moved upon the subjacent fascia. On some parts of the leg, several of the nodules just described have become united, and form a tuberculated plaque as large as a half-crown, and of irregular shape. The left foot and leg have undergone alterations of a similar character and equal severity. Both hands are thickened and deformed, and the fingers are spread out. Upon both sides, the back of the hand and fingers, the ball of the thumb and the palmar surface as far as its middle, are uniformly occupied by nodular masses similar to those which have just been described; moreover, that portion of the skin which is free from nodules is also swollen and thickened; the entire hand is consequently enlarged, its dorsal surface is distended like a cushion, the fingers are of a bluish-red colour, tuberculated, half extended, divergent at the tips, and here and there occupied by isolated, bright-red nodules which vary from the size of shot to that of beans. The skin of the palm is tense, swollen, smooth, glistening, in parts covered with scales, and occupied by small tubercles and a few nodules as large as beans; the fingers cannot be flexed and the hand cannot be closed. From the wrist to the middle of each upper arm, there are a few, slightly elevated, or more prominent, rounded nodules, some of which are isolated and others crowded together, so as to form plaques as large as a crown-piece. The largest nodules are situated at the margins of the plaques; some of them are extremely firm, whilst others are of a dark-brown or dark-bluish red, glistening appearance, and diminish under pressure, like erectile tumours, and resume their usual aspect as soon as the pressure is removed. The centre of such a plaque is depressed, highly pigmented, almost black, and looks like an atrophied scar, or is covered with small, flat, firm, brownish-red nodules. Upon the chin, cheeks, and upper lip there are eight slightly prominent, or globular, firm, bluish-red, well defined nodules, from the size of a bean to that of a sixpence. The inguinal and axillary glands are moderately swollen, but not painful. The patient feels tolerably well, except that his sleep is disturbed by severe pains caused by "tension," and pressure on the hands and feet. There is no fever; the appetite is good.

During his stay of two months (to 22nd September) there was no especial alteration in the appearance of the nodules, and only a few new ones became developed on the thighs and upper arms. The new ones sprang from firm red patches as large as lentils. The patient left the Hospital on 22nd September, because he wished "to die at home." Meanwhile, I had excised two nodules, one of which was evidently of more recent growth than the other, and, by a microscopical investigation, had recognised their structure as that of a small-celled sarcoma, the cellular elements being accumulated into irregular clusters and distinct foci. Here and there were traces of small hæmorrhages in the corium or papillæ; moreover, there was an abundance of yellowish-brown and black pigment, most of which existed as free molecules outside the cells. The cellular infiltration was situated, for the most part, in isolated areas in the corium, the tissue of which, as well as that of the papillæ, was otherwise quite normal. At other points, the papillæ were less distinctly separated from each other, and partly infiltrated with small, round cells, and partly with agglomerations of red blood-corpuscles (hæmorrhages) and pigment. I was now informed as to the true character of the disease; its further course I soon learned by observing

CASE II.—B. Ch., aged 66, married, a distiller, from Krakau, was taken into the clinic on the 5th April 1869, fourteen months after the appearance of the disease.*

Stat. præsens.—The skin of the soles and inner margins of the feet is beset with sharply defined, violet-red, firmly elastic, nodular infiltrations, which occupy patches as large as a half-crown or the palm of the hand, and project above the level of the skin. Only the margins of the larger plaques are formed by the nodules in question, whilst the centre is slightly depressed and resembles a cicatrix. Scattered here and there, especially upon the lower extremities, there are structures similar to the nodules, just described, which are rather painful on pressure, smooth on the surface, shining or somewhat wrinkled, and moderately scaly. Most of them are firm and resistent; some are turgescent and capable of being compressed. The right hand is enlarged and misshapen, the fingers much thickened and widely separated. The bones of the metacarpus are broad and thickened. On the skin of the fingers there are isolated and confluent nodules. On the back of the hand, extending from the terminal phalanges of the fingers to the wrist-joint, and including the whole width of the hand, there is an ulcerated surface, covered with sloughing, ichorous, stinking, broken-down tissues, and limited by a mass of newly formed material, which is hard and prominent at the outside, but towards the ulcer softened and disintegrating. The base of the sore extends in some places as far as the periosteum. On the right forearm there are nodules as large as peas, beans, or hazel nuts, which have the above described characters; some of them are isolated, whilst others are collected together into groups of three or four. The left upper extremity, and especially the left hand, is affected in a precisely similar manner, the hand presenting the same abundant development of nodules and infiltration, but no ulceration, whilst on the arm, for the most part, only disseminated nodules exist. Upon each of the right eyelids there is a hard, dark-red nodule, of the size of a bean, which is fissured on its surface, and projects beyond the margin of the lid. Similar nodules, either disintegrating or still intact, exist on the left eyelids. Several nodules as large as hazel nuts may be seen on the right ala of the nose; the free edge of the left ala nasi is red, thickened, hard, partially destroyed, and occupied by a superficial ulcer. None of the subcutaneous glands are noticeably enlarged.

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* 'Jahresb. des k. k. allg. Krankenhauses,' Wien, vom Jahre, 1869, p. 234.

After the patient had been in the Hospital five weeks (on 12th May) a profuse, bloody diarrhœa and continuous fever set in, and he died on 21st May. Meanwhile, some of the nodules had undergone more or less alteration, and a few new ones had become developed. An appropriate treatment of the sloughing parts served to render his condition more comfortable.

Post-mortem appearances.—The body was of medium size, emaciated, pale, the hair of the head black, but sprinkled with white, the pupils moderately, but equally, dilated; the neck was short, thorax arched, abdomen retracted. On each eyelid of both eyes, there was a globular nodule nearly as large as a hazel nut still partially covered with epidermis, and seated on a broad, short stalk. One of these, when cut through, appeared, in part, of a dark, blackish-brown, and in part of a whitish-red colour, and a small quantity of thin juice exuded from it. Similar, though firmer and more numerous nodules, as large as peas, were found on the fronts and backs of both ears, especially the right, and also at the margins of the nasal orifices, which, owing to the series of superficial nodules covering them, had acquired a bossy and tuberculated appearance. Isolated nodules of the same kind were found upon the buttocks, arms, thighs, and legs. On the extensor sides of the hands and feet there were numerous plaque-like nodules, which projected ½–1''' above the surface, varied from the size of a bean to that of a plum, and were covered by an extremely thin, violet-coloured skin, glistening like satin. On the dorsal surface of the right hand and much swollen fingers, most of the skin and subcutaneous tissue as deep as the tendons, was converted into a greyish-green, stinking pulp; the margins of the loss of substance were extremely irregular. The bones of the calvaria were thin but compact, the dura mater was moderately tense, the arachnoid and pia mater moist, the brain itself anæmic and moderately firm, its convolutions somewhat atrophied, the ventricles contained about half an ounce of clear serum, and their ependyma was thickened. The lumen of the art. basilaris was reduced, by a thickening of its intima, to about one-third of its normal size. The thyroid gland was small, and contained but little blood. The mucous membranes of the larynx, trachea, and pharynx were pale. On the posterior wall of the latter, as well as on the lower surface of the right half of the epiglottis, and over the third, fourth, and ninth tracheal cartilages, the mucous membrane and submucous cellular tissue were replaced by moderately firm, vascular nodules as large as sixpenny-pieces, and similar in character to the external new formations which have previously been described. One of these nodules, as large as a pea, was situated immediately below the right vocal cord, and two other smaller ones corresponded to the anterior segment of the cricoid cartilage. Both lungs were emphysematous and extremely anæmic; in the lower lobe of the left lung, however, there was one red, hepatised spot as large as a walnut, and several smaller ones. In the bronchi, especially of the red colour; their surface was pitted. In the pelvis of the right kidney there was a three-cornered stone about the size of a hazel nut; it was the colour of chamois leather, and sent processes into several of the calices; there were also several concretions of a similar character about the size of millet seeds. The bladder contained several such small concretions, together with a few drachms of turbid urine.

A microscopical investigation of the cutaneous nodules in this case showed them to consist of the same structures as the nodules in Case I.

CASE III.—Alter Ebner, aged 45, married, from Czernowitz, a well grown, healthy-looking man, presented himself on the 3rd October 1869. He stated that his feet had been ailing for eight months. Upon the sole of the left foot there were several deep-seated nodules about the size of peas, which, as seen through the thick epidermis, were of a bluish-red colour. Near the inner margin of the foot there was a confluent plaque, the centre of which was depressed. Some nodules existed upon the dorsum of the foot and over the ankle-joint. The whole of the left foot was swollen, firm, and tense, and the skin of its plantar surface especially so. On the right foot, smaller nodules were found only on the dorsal surface of the second and third toes. The hands and remaining portions of the body were free from the disease. The patient came to seek advice on account of the painfulness of both feet. He took, at his own desire, a number of sulphur baths, but without any benefit, and returned in a few weeks to his own home.

CASE IV.—In the course of the summer of 1870, a man, about 50 years of age, who belonged to the well-to-do class, of Vienna, sought advice on account of four or five nodules in the hollow part of the sole of the right foot. They were deeply imbedded in the tissue of the skin, scarcely at all prominent, firm, very painful on pressure (and on walking), of a bluish-red colour, and covered by thick, epidermic callosities. The colour, globular form, painfulness, situation, and similarity of the nodules, together with our previous experience, led us, at once, to regard the complaint as the initiatory stage of the process, which, in the third case, we had seen in a rather more advanced condition, and in the first and second cases, as a universal affection. After the epidermis had been macerated, the deep-seated globular nodules were repeatedly destroyed by cauterisation, in spite of which a number of new ones subsequently became developed in the region of the sole and margin of the foot.

CASE V.—In the summer of 1871, a man, about 40 years of age, presented himself as an out-patient, upon the sole of whose left foot there were a great number of large, painful nodules, some of which were isolated and others arranged in plaques, their true character, therefore, being well pronounced and very easily recognised. The patient has not shown himself again.

(In this category might, I think, be reckoned the case of a boy 6–10 years of age, from Zurich, which was related to me by Prof. Billroth, after I had shown him Case II., and preparations of Case I., and in which several nodules, having the characters just described, as large as peas, were developed upon the legs in the course of a few months. Prof. Billroth showed me a drawing of the case. He has been informed that the nodules increased prodigiously in number, and the boy died about a year afterwards.)

The main features of the disease, as shown by the cases just related, may be summed up as follows:—

Without any known general or local cause, nodules as large as pigeon-shot, peas, or hazel nuts, and of a bluish- or brownish-red colour become developed in the skin. Their surface is smooth, their consistence firm and elastic; sometimes they are expansile, like an erectile tumour. They are isolated, and, when increased in size, appear as globular prominences. Or, they form groups, and then remain more flattened. In the latter case, the central nodules of the plaque undergo involution and give rise to a dark, pigmented depression. They always occur first on the sole and dorsum of the foot, and soon afterwards on the hands. They develop most abundantly on these parts, and are associated with a diffuse thickening of the skin and deformity of the hands and feet. In the further course of the disease, nodules which are either isolated or arranged in groups occur also on the arms, legs, and face, but they are always fewer in number and irregularly distributed. The nodules may, in part, undergo atrophy and involution. It would appear that they become ulcerated at a late period only, or, more correctly speaking, the part which they occupy becomes gangrenous. The lymphatic glands do not become materially swollen. Finally, similar nodules become developed in the mucous membrane of the larynx, trachea, stomach, intestines, and liver, but, most abundantly, throughout the large intestine as far as the anus. The disease always terminates fatally within two or three years. The cases observed all occurred in men over 40 years of age (Billroth's case excepted).

In contradistinction to what occurs in carcinoma pigmentodes, it is to be mentioned that the typical pigment-sarcoma described always began on the feet, and, from thence, gave rise to subsequent deposits which did not correspond to the large lymphatic vessels; that the glands, generally, appeared almost wholly unaltered; and the supposition that the disease might have been propagated by metastasis is also hardly supported by the fact that both feet, and soon even both hands, became affected in like manner and with equal intensity, and with greater intensity than any other part of the body. Whilst it is quite possible for carcinoma to remain a local affection for a long time, and only become a general affection by metastasis, it must be admitted that, in the disease under discussion, a general morbid affection exists from the very outset.

An examination of nodules taken from Cases I. and II. showed them to have identical histological characters—groups of small round cells in the corium, small hæmorrhages in the nodules, and abundance of pigment. It could here be demonstrated, more easily than in the carcinoma pigmentodes, that the remarkable pigmentation was perhaps entirely, or, at least for the most part, due to excessive vascularity, or to hæmorrhages within the nodules.

According to present experience, the disease must be regarded from the outset not only as incurable, but as fatal. Since it commences almost simultaneously on both hands and feet, and since, for this reason, it must be regarded as a general affection from the beginning, we could not entertain the least hope of checking its pernicious course by an early extirpation of the original nodules, even if the operation itself were practicable.

The most constant, and almost the only annoying symptom which calls for treatment is the sensation of tension and pain in the hands and feet. Emollient salves, Emplastrum Hydrargyri, cold applications, wet packing, &c., together with opiates (subcutaneous injections of morphia), may, in this respect, afford the patient some relief.

Besides the typical form of general sarcomatosis, which we have just described, certain sarcomata of the skin come under observation as isolated growths which have developed idiopathically. They are, however, much more rare than those which are to be regarded* either as metastatic productions, or as

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* In the course of the summer of 1872, a man, 30 years of age, presented himself, as an out-patient, who had, on the dorsal surface of the second phalanx of the right great toe, a flat, button-shaped, dark blue, firm, elastic tumour, which was as large as a half-crown, and rested upon a short neck. It was said to have become developed within a few months upon skin which was previously in a sound condition. The man's complexion was sallow, though he was otherwise in good health. The pain which was caused by pressure of the boot, induced me to remove the growth. When examined under the microscope, it proved to be a highly pigmented, spindle-celled sarcoma.

[In the 'Deutsch. Archiv. für klin. Med.' (Bd. xii., p. 134 und Taf. ii.), Dr. Port records and figures a case of multiple Sarcoma of the skin which is worthy of note here. He thought the case resembled the Mykosis of Alibert, and therefore it might also be referred to the chapter on Framboesia, vol. iii., p. 165. The patient was a man, aged 36, who came under the care of Prof. Ziemssen, in the Hospital at Erlangen, in the year 1865. At the age of 5 he was said to have suffered from a general papular eruption, which gradually became scaly. At 20 he was said to have "Ichthyosis." When 32, the eruption used to weep. Six weeks before he came under care, "broad, weeping, condylomatous patches" made their appearance on all parts of the body. They rapidly increased in size and number, in spite of treatment. Three months later, he was covered from head to foot with fungating tumours, of a pinkish colour, soft consistence, and secreting profusely. Some of them were three inches in diameter, and elevated half an inch above the surface, others quite small. The portions of skin which were unaffected had a parchment-like aspect. On the extensor surfaces of the upper extremities were patches resembling Psoriasis. The largest tumours were situated on the neck, above the clavicles, on the front of the chest, and on the back. His appetite remained good, and there was no lesion of any internal organ. Four months after admission, his appetite began to fail, and he gradually sank till he died, at the end of another month. No lymphatic glands had become affected. No lesion of any metaplasiæ which have become developed from some pre-existing new growths (warts).

internal organ of any importance was discovered. The tumours were found to consist of cells of small size, varying very little from one another, not possessing any very definite characters or arrangement, and held together by a small amount of stroma. The tumours were rounded, nodular, of elastic consistence, and of a greyish-white colour on section. No juice could be squeezed out from them. The cells, though small, were larger than those ordinarily met with in granulation-tissue.

There was no history of any skin affection in any of his relatives. There was no evidence of Syphilis. The case was remarkable for the number of tumours which had rapidly become developed. They were all confined to the skin, none having involved the subcutaneous tissue.]—Tr.

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